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# ADDRESSES.

## WATERBORNE CHOLERA.

An Address delivered before the Forty-fourth Annual Meeting of the American Medical Association, held at Milwaukee, Wis., June 7, 1893.

BY ERNEST HART, M.D.

EDITOR OF THE BRITISH MEDICAL JOURNAL; CHAIRMAN OF THE NATIONAL HEALTH SOCIETY.

*Mr. President and Members of the American Medical Association:*—The thesis which I am here to present to you is one which has a superficial air of triteness, but it is not our value to be affected by superficialities, and I hope to convince you that although well worn, the subject of the causation and prevalation of cholera is by no means threadbare. At any rate, to such threads of this well worn subject as have survived attrition, there lie attached untold thousands of lives, which it may be yours or mine at any moment to save. My thesis is that cholera death is a violent death, an unnatural death, a preventable death; that the very existence of epidemic cholera, not to say endemic cholera, is a reproach to the nation and to the community in which it exists. Being a violent death, its prevalence is due to ignorance or apathy, which, from the dimensions of a blunder, easily develop into the proportions of a gigantic crime. Cholera deaths can be prevented, ought to be prevented; and, as I firmly believe, have been largely diminished by agencies to which medical men have pointed and will, in our lifetime, and therefore before long, be so wholly prevented that Asiatic cholera, like the Asiatic plague, the bubonic pest and their more modern correlative, typhus fever, will become extinct among European nations, and survive only among the records and relics of an historic shame. You will perhaps hardly be surprised, even although you may not yet be prepared to accept my view of the facts, if I begin by saying to you what I hope to end by proving, that epidemic cholera can only be diffused where the water supplies of the community are poisoned with a specific poison, which we had recently identified as the cholera bacillus. That identification I believe to be correct, but the correctness of it is not necessarily associated with the true interpretation of the historical facts of the case. It, however, concurs with them. The independent evidence which it supplies, strengthens our appreciation of clinical records of cholera infections and cholera outbreaks, in the past and the present. But its more or less of error or incompleteness, if such there be, does not prevent our correctly interpreting the epidemic and clinical histories which are inscribed upon the scrolls of cholera literature.

There still survive some of the old notions which half a century ago—indeed much more recently—attributed cholera to the operation of "telluric" and "meteoric" influences, "atmospheric" and "pandemic" waves, "cholera blasts," and other mysterious agencies, are happily now becoming things of the past, though eminent writers are still to be found who discuss the spread of cholera from the point of view of some "general influence" or "choleraic influence," to the obscuring of other agencies which the overwhelming evidence of past epidemics has shown to be of superior and more practical importance. Even as recently as the great Russian epidemic of 1892, a clever English, though happily non-medical, writer (Hall Caine), referred to "the cholera insect which flies across the frontier," and I have been gravely apprised from one or two quarters of "blue mists," and "plagues of flies," such as were observed during previous cholera epidemics.

Ideas of this sort may, perhaps, be pardonable among such unenlightened communities as last year destroyed the cholera hospitals hastily provided at Astrakhan and Saratoff to receive the victims of the advancing scourge, and cruelly maltreated the doctors who, in the midst of superstition and filth were battling with its subtleties. But it is desirable to put aside these theories, or leave them for academic discussion, and to deal with the spread of cholera practically in the light of the accumulated evidence afforded by all the great epidemics of the past. That accumulated, and unhappily still accumulating, evidence clearly shows that cholera is a filth disease carried by dirty people to dirty places, and there spread by dirt and the use of dirty water. It is well to take every means of impressing this fact on the popular mind, and to use it as a powerful lever to push forward the war against filth already so well begun. We should aim at security purity of our water, our air, our soil, and our habits. This achieved, cholera need no longer be feared. But it is a herculean task, and must in many countries, where filth, so to speak, is endemic, be slow of accomplishment. Even in our own country, the Augean stables requiring to be cleansed are still far too numerous. There are still far too many villagers and even townspeople throughout England who are more than satisfied with the polluted wells which have served their ancestors without bringing them to a premature grave. Water supplies are still too frequently obtained from contaminated rivers, and filth nuisances of every description are still too common amongst us. But to cherish and seriously discuss theories respecting "cholera influences," "epidemic waves," and so forth, is to retard the work of sanitary reform, and render it more difficult of successful and speedy accomplishment.

Ever since Snow in 1849, with the shrewdness of genius and the confidence of conviction, propounded his belief that the consumption of polluted water had had a great deal to do with the spread of cholera in England, each succeeding epidemic in this country and elsewhere has furnished overwhelming evidence of its truth. For my own part, the deductions of Snow, confirmed as they were by the elaborate investigations of Farr and Simon, were always conclusive; but since 1866, when I was personally instrumental in tracing the disastrous cholera epidemic of that year in East London to the distribution of unfiltered and polluted water from the Lee during several days by the East London Water Company, I have been convinced that specifically polluted water is not merely an occasional or adjuvant cause, but the *causa causans* of almost every great epidemic of Asiatic cholera. Further, when the use of the poisoned water has been abandoned or cut off, the epidemic has ceased.

I have closely watched each successive disastrous cholera outbreak which has occurred within the last thirty years, and the facts have practically without exception, clearly borne out this contention, and strengthened my robust faith in it. The neglect of prompt and complete investigation of the whole circumstances of many of the foreign epidemics have rendered it impossible in some cases to learn all the facts; but where full investigations of the facts have been made by competent inquiries, the result has in almost every instance been remarkable in the confirmation afforded of the diffusion of cholera by water.

### (A) ENGLISH EXPERIENCES.—EPIDEMIC OF 1831-33.

In England, cholera first appeared in October, 1831, and between that time and the summer of 1833, it ruthlessly ravaged various parts of the kingdom. No accurate history of the epidemic exists, and there are no reliable statistics respecting it, as the present system of registering the causes of death had not then been established. But in places in Great Britain having an aggregate population of less than 5,250,000, the deaths of 31,376 persons, and in Ireland of 21,171 persons, were reported through various channels to the board of health. In London alone, which then contained a population of little more than 1,500,000 there were 13,144 cholera attacks, and 6,729 deaths during eighteen months; that is to say, one person out of every 117 was attacked by the disease, whilst one in every 250 died. The epidemic filled the people with consternation, and took the medical profession by surprise. Its characteristics were unfamiliar and unaccountable, and its extension was so sudden and mysterious that it was popularly looked upon as a visitation of Providence beyond human control. According to the *Annual Register* of 1832, "the cholera left medical men as it had found them—confirmed in most opposite views, or in total ignorance as to its nature, its cure, and the causes of its origin, if endemic, or the mode of transmission if it were infectious." This, perhaps, is rather a severe criticism; for although all that we now know of its habits had not then become clear, the new disease was carefully studied, and much was learned of its characteristics. A consultative board of health was established, and the privy council circulated rules and regulations which, though far from complete, contained much sound advice. It was pointed out that the disease had special affinity for the poor, ill fed, unhealthy parts of the population, especially those of drunken, irregular life, and those districts which were unclean, ill-ventilated and crowded. General cleanliness was enjoined, the provision of special hospitals was advised, and strict quarantine was sought to be enforced. But the most active medium of its epidemic extension—namely, water—seems to have received little thought. Whether water played a conspicuous part in the 1832 epidemic can not be proved to demonstration, as attention was not then directed to that phase of the subject. But the general circumstances of the water supplies of the country were such as to favor the diffusion of cholera once introduced; and incidents collected a few years later by Dr. Snow[1] respecting the distribution of the disease in 1832 in London, Newburn, Newcastle, Nottingham, Exeter, and elsewhere, lead to the presumption that, as in subsequent epidemics, contaminated water played its part.

The sanitary condition of these islands at that period was very different from what it is at the present day. Unprotected wells, leaky cesspools, and filth nuisances of every description abounded, for the age of sanitary reform had not then commenced.

### THE EPIDEMIC OF 1848-9.

The epidemic of 1832 set men thinking, and gave a great impetus to sanitary reform. Before the next great invasion of this country by cholera in 1848, a growing tendency towards improvement in sanitation was distinctly noticeable. In September, 1848, cases of cholera occurred in Hull, and were soon followed by outbreaks at Edinburgh, Leith, Sunderland and elsewhere. It rapidly overran the whole country, and before it had disappeared in epidemic form towards the close of 1849, 53,293 of the English people had died from it, and 18,887 had died from diarrhœa, out of a population of some 17,564,656 living in a great variety of circumstances. It was in August, 1849, whilst this epidemic was running its course, that Snow[2] cast a strong light on the spread of cholera by propounding his theory that a most important way in which the disease may be widely disseminated is "by the emptying of sewers into the drinking water of the community." As far as his inquiries had extended he had found that in most towns in which the malady had prevailed to an unusual extent this means of its communication had existed. He pointed out for instance, that the joint town of Dumfries and Maxwellton, not usually an unhealthy place, had been visited by cholera both in 1832 and at the close of 1848 with extreme severity. On the latter occasion the deaths were 317 in Dumfries, and 114 in Maxwelltown, being 431 in a population of 14,000. The inhabitants drank the water of the Nith, a river into which the sewers emptied themselves, the contents floating afterwards to and fro with the tide. Glasgow, which had been visited severely with the malady, was supplied with water from the Clyde, by means of an establishment situated a little way from the town higher up the stream, and the water was professedly filtered; but, as the Clyde is a tidal river in that part of its course, the contents of the sewers would be washed up the stream and the supply of water could not be altogether free from contamination. Again, he pointed out that in 1832 the cholera was much more prevalent in the south and east districts of London, which were supplied with water from the Thames and the Lee where those rivers were much contaminated by the sewers, than in the other parts of the metropolis differently supplied. And this he observed was precisely what again occurred in 1849. It may here be mentioned that in 1849, and for a few years later, none of the London water companies obtained their water higher up the Thames than Vauxhall bridge, above which point the river received an ever increasing amount of sewage.

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[1] On the Mode of Communication of Cholera. By John Snow, M.D. 1854.

[2] Pamphlet dated August 29, 1849, On the Mode of Communication of Cholera. By John Snow, M.D.

But apart from the water companies, there were a great many pumps supplied by wells in use in the metropolis. On investigating a sudden and severe outbreak of cholera in Surrey Buildings, Horsleydown, Dr. Snow found that a certain well in use by the patients had been exposed to direct pollution by the dejections of earlier patients. A very similar state of affairs was found at Albion Terrace, Wandsworth Road, where a number of cholera cases occurred almost simultaneously. In that instance there was no data for showing how the disease was probably communicated to the first patients, "but it was two or three days afterwards, when the evacuations from these patients must have entered the drains having a communication with the water supplied to all the houses, that other persons were attacked. and in two days more the disease prevailed to an alarming extent." This explanation of the outbreak was disputed at the time, but Dr. Snow pointed out that "the only special and peculiar cause connected with the great calamity which befell the inhabitants of these houses was the state of the water, which was followed by the cholera in almost every house to which it extended, whilst all the surrounding houses were quite free from the disease."

His theory of the whole epidemic of 1848–9 was that the cholera matter was brought to London by patients from Hamburg, that it was multiplied by infected persons, that the infectious sewage matter found its way partly through soil into the wells, and partly through sewers into the Thames and Lee, from which a portion of the water supply of London was derived. This theory was adversely criticised in a report by Drs. Baly and Gull to the London College of Physicians in 1850; and, as Mr. N. C. McNamara has well remarked in his valuable Treatise on Asiatic Cholera, "these physicians well-nigh nipped this doctrine in the bud; had there been less truth in it than there is, their unqualified and positive condemnation of this theory would have utterly crushed it. As it is, their opinions have done much to retard the progress of our knowledge of the etiology of cholera."

### EPIDEMIC OF 1853–54—THE BROAD STREET PUMP.

Dr. Snow had not long to wait for an opportunity of putting his theory to the test. In the early part of the summer of 1854 cholera had obtained a foothold in London. One special outbreak which occurred in the parish of St. James, Westminster, during that epidemic, is almost of historic importance, as it was the first instance in which the agency of water as a disseminator of cholera was clearly demonstrated. The outbreak was a good illustration of what occurred all over this country during the earlier cholera epidemics, and of what I regret to say occurs at the present day in India and elsewhere. The first death in the parish was recorded early in August, and throughout that month a few deaths were recorded each week. But during the week ending September 2, seventy-eight deaths were registered; in the next week there were 287 deaths, in the following week there were sixty-seven, and then the mortality as quickly subsided as it had risen. But before it had disappeared at the beginning of November, some 700 fatal attacks had occurred in this single parish; that is to say, twenty-two out of every 1,000 persons living in the parish had died of the disease within three months. In the excitement of the moment various causes were assigned for this mysterious and sudden outburst. Some accused the ancient pest field in the parish, where during the Great Plague the dead had been buried by the hundred, of casting forth the disease germs buried there nearly 200 years previously. Others laid the blame on the unflushed and defectively ventilated sewers; whilst others again found sufficient cause in the extreme heat of the weather. But no satisfactory solution of the mystery presented itself until Dr. Snow was called in to examine the water supplies.

On studying the record of the deaths, Dr. Snow found that nearly all of those registered in the first week of the outbreak had taken place within a short distance of the parish pump in Broad street; and that of seventy-three deaths in the locality around this pump, sixty-one were found to have been of persons who used to drink the water from that particular pump. Pursuing his inquiries, he found that in a factory in the neighborhood, where the water was always used, eighteen out of the 200 workpeople died. On the other hand, in an adjoining brewery in Broad street, where water from that pump was never used, not one of the seventy workmen employed suffered from the disease. In another case a gentleman came from Brighton to see his brother, who was attacked by cholera in a house near the pump. On his arrival he found his brother dead, but he did not see the body. He remained only twenty minutes in the house, and after partaking of a hasty lunch, including some brandy and water (the water being from the Broad street pump), he proceeded to Pentonville, where he was attacked by cholera during the following day, and was dead within twenty-four hours. In another case, a lady living at Hampstead was in the habit of having brought to her daily a large bottle of water from the Broad street pump, as she had a preference for it, the water being both cool and sparkling, as sewage polluted water often is. The water was taken to her as usual on August 31; she drank of it, was seized with cholera on the next day, and died within twenty-four hours. A niece who was on a visit to this lady also drank of the water, returned to her residence in a high healthy part of Islington, was attacked with cholera and died also. In all these cases the water was used cold and unboiled. Had it been boiled before use its peculiarly sparkling character, which constituted its attractiveness, might have been sacrificed, but its dangerous properties would have been destroyed. Many dismal incidents such as these were discovered both by Dr. Snow and by the Rev. Mr. Whitehead, who conducted an independent investigation and showed the complicity of this well water with the outbreak. On following up the clue it was found that the pump immediately adjoined the house, No. 40 Broad street, and on the drains of that house being opened, a filthy condition of things was disclosed. There was a cesspool under a common privy, within three feet of the well and at a higher level than that of the water in the well. The walls of the cesspool were rotten, and the contents could leak into the surrounding soil. The walls of the well were also found to be rotten, and there was distinct evidence of the cesspool contents having for a long time leaked into the well. Further investigation also disclosed the fact that on August 28 a child aged five months, living in this house, was attacked with what was registered as diarrhœa, and died on September 2. The symptoms of this child's illness, however, were distinctly choleraic.

This ghastly experiment fortunately bore good fruit. The more practical of our sanitarians realized its bearings, and the purity and protection of our water supplies received more attention. The first step was the abolition in the metropolis of such dangerous shallow wells as that in Broad street; wells which, in the words of Sir John Simon, contained evidence that "they represented the drainage of a great manure bed."

But the water companies also needed much reform, for it was now evident that they had unconsciously been trying gigantic experiments with the lives of Londoners. In 1856 Mr.—now Sir John—Simon, who was at different times a member of the committee for scientific purposes appointed to investigate the nature and circumstances of the cholera epidemics, medical adviser to the general board of health, and medical officer of the privy council, had in his reports described very fully the relations of the water supplied by the London water companies with the epidemics of cholera. He showed in 1856 that as often as Asiatic cholera had been epidemic in London it had been observed to prevail with especial severity in certain localities on the south side of the Thames—in St. Saviour's, St. Olave's and St. George's, Southwark, and in Bermondsey, Newington, Lambeth, Wandsworth, Camberwell and Rotherhithe.

The water supply of these districts was divided between two companies—the Lambeth and the Southwark and Vauxhall. In 1853 the former company drew their water from the Thames at Thames Ditton, having recently, in conformity with the requirements of the metropolis water act of 1852, moved their intake from Hungerford bridge; the latter company, however, still drew their supply from the Thames at Battersea. The former company, pumping from the higher and cleaner part of the river, furnished as good a water as any then distributed in London; while the latter, pumping from Battersea, was purveying perhaps the filthiest stuff ever drunk by a civilized community.

Microscopical and chemical observations proved the almost incredible foulness of the water supplied by the Southwark and Vauxhall company. It was not only brackish with the influence of each tide, but was contaminated with the outscourings of the metropolis, swarming with infusorial life, and containing unmistakable molecules of excrement. Bearing these facts in mind, the following figures, culled from the records of the cholera epidemic of 1854, are more than suggestive:

In the 24,854 houses supplied by the Lambeth company, comprising a population of about 166,906 persons, there occurred 611 cholera deaths, being at the rate of thirty-seven amongst every 10,000 living. In the 39,726 houses supplied by the Southwark and Vauxhall company, comprising a population of about 268,171 souls, there occurred 3,476 deaths, being at the rate of 130 out of every 10,000 living. Thus the population drinking dirty water appears to have suffered three and a half times as much mortality as the population drinking other water, although in many localities the mains of the two companies ran side by side through the streets, and the supplies of the two companies were so interlaced that it was not possible to define accurately their respective limits, or even to say that the whole of the houses in any particular street were supplied by one particular company.

The significance of these contrasts is made more evident by a glance at the records of the preceding epidemic of 1848-9. At that time the Lambeth Company drew their water from the Thames at Hungerford bridge, and were supplying even a worse water than the Southwark and Vauxhall Company. As already mentioned, in 1853 611 cholera deaths occurred amongst the customers of the Lambeth Company, but in 1848 1,925, or three times as many deaths, had occurred among the same set of customers, who were, however, then drinking water from a more polluted part of the river. On the other hand, the Southwark and Vauxhall Company not only did not secure a pure source of water between 1848 and 1854, but in the latter year were distributing an even stronger solution of sewage matter than during the earlier epidemic. One is justified in inferring, therefore, that of the 3,476 tenants of the Southwark and Vauxhall Company who died of cholera in 1853-4, two-thirds would have escaped if their water supply had been like that of their neighbors, and that of the much larger number—tenants of both companies—who died in 1848-9 also two-thirds would have escaped, if the Metropolis Water Act of 1852, with its stringent provisions prohibiting the abstraction of water from the Thames below Teddington Lock after August 31, 1855, had but been enacted a few years earlier.

### EPIDEMIC OF 1866.

The next invasion of this country by cholera was in 1866, and it is memorable for the terrible experiment which was unconsciously carried out by another of the London water companies, at the expense of some 4,000 lives in East London. The disease appeared in London in the last week of June, when six deaths were registered. During the succeeding weeks there were 14, 32, 346, 904, 1,053, 781, 455, 265 deaths, and then the mortality gradually declined, but before the first week of December 5,915 deaths had been registered. Of these, 4,276 occurred in the east districts of the metropolis and adjacent suburban districts of West Ham and Stratford. It was in these districts that the rapid and unexampled development of the outbreak occurred.

Early in the outbreak I was struck by its incidence on the area supplied with water by the East London Water Company, and I felt confident it could only be due to a sudden specific pollution of the water supply. Acting on behalf of a great medical journal I despatched the late Mr. J. Netten Radcliffe (who had not then become attached to the medical department of the privy council) to investigate the matter. At first, of course, he was met with a blank denial on the part of the water company that anything had occurred in connection with their water supply which could explain the distribution of cholera; a refusal to accept any such denial, and a patient investigation, in which the officials gave all necessary aid, though under protest, at last made it plain that owing to changes having been made in their filtering apparatus the company had sent out for a few days unfiltered water, or water in a very partially filtered state, direct from the river Lee. Subsequent inquiry proved that just at that moment the waters of the Lee had been infected with choleraic discharges from a cottage whose sewers were connected with the river, and in which a family had come to reside who had reached Southampton infected with cholera, and were allowed to pass on after they were supposed to have recovered. The whole history of this outbreak is set out in great detail in Mr. Radcliffe's report included in the appendix to the ninth report of the medical officer of the privy council. Mr. Radcliffe thus summarizes the more prominent questions arising out of the outbreak:

"The outbreak in the metropolis was one of a succession of phenomena which indicated a widespread diffusion of cholera infection in the kingdom during the month of June, 1866, and this diffusion was inseparably connected with a direct dissemination of the infection from the continent. Although facts are not forthcoming which would establish the direct dependence by transmission of the recent outbreak upon the break previously occurring in Western Europe, the conclusion does not follow legitimately that no such dependence existed. . . . . The earliest unquestionable cases of the outbreak took place on June 26th, 1866, on the east verge of the metropolis, upon the banks of the river Lee, and the outbreak reached its acme in the fifth week following. The mortality among the population was proportionately less from this outbreak than from any previous outbreak in the metropolis, but the disease was not less fatal in proportion to the number of persons attacked. Of the total mortality of 5,915, no fewer than 4,276 occurred in the east districts of the metropolis and adjacent suburban districts of West Ham and Stratford. It was in these districts that the disease underwent the rapid and unexampled development which gave to the outbreak such formidable proportions in the fifth and six weeks of its duration. The unusual development of the epidemic in the east districts as compared with the rest of London began in the week ending July 13th. In the week following the rate of increase, as compared with the previous week, was nearly seven times greater than in the rest of the metropolis, but in the subsequent week the rate of augmentation became virtually the same over the whole of London. Neither the meteorology of the period, nor altitude, nor the nature of the soil, nor density of population, nor filth, nor the state of the sewage, nor locality, affords any explanation of the peculiar localization of the outbreak in the east districts. There is but one condition known which might become capable of propagating cholera, common to the whole area of the outbreak, namely, the water supply. The sudden and virtually contemporaneous development of the outbreak over the entire area of prevalence indicated a medium of propagation common to, and capable of rapid diffusion over the whole area; its sudden declension indicated the temporary efficiency to this end of such a medium. The area of prevalence approximated with remarkable closeness to a particular field of water supply, and there are facts which seem to prove that this approximation was not accidental. It is known that, immediately prior to the outbreak in the east districts of the metropolis and neighboring districts across the Lee, impure water was distributed over this field of supply, and it is highly probable that this water was charged with choleraic poison. It is submitted that these facts and inferences supply a sufficient and legitimate explanation of the great and explosive development of cholera in the east of London and its suburbs during the recent outbreak, and it is argued in respect of a serious objection to this theory, arising out of the actual or relative immunity from cholera of certain districts and institutions supplied with the suspected cholera-infected water, that in the present state of our knowledge of the outbreak, the positive and more generally applicable facts may justly and for practical purposes warrant a conclusion apparently in contradiction with certain negative facts of much more restricted application."

During 1866 the cholera was not restricted to London, but was diffused over the whole country, and, in his annual report for the year, the registrar-general showed that it had prevailed, as on former occasions, in particular fields. "The epidemic," he observed, "has been most fatal on the sea coast in the chief ports of the kingdom. It is by no means capricious, but obeys definite laws. It never destroys the people to any extent where the water supply is pure or where the hygienic conditions are good, when the authorities adopt judicious and well-organized measures of early treatment and systematic disinfection. Those districts which are supplied with bad water, have no effective system of sewerage, have no health officer, and have no precautions in force should immediately set their houses in order, as they are still in imminent danger." He further pointed out that, though the cholera had diffused itself over the remotest parts of the kingdom, its ravages had been restricted everywhere except where the people were living in the open violation of the laws of health. "The returns contain many examples of the efficacy of hygienic measures, and afford strong proofs of the doctrine that, if England has suffered less from cholera in the present year than the continent, or less than England herself in former years, it is mainly due to changes which all Europe can appreciate and adopt. Among other instances the Black Country, as it is called, about Wolverhampton may be cited. The epidemics of 1849 and 1854 destroyed in five districts more than 3,000 lives, while in the year 1866 the mortality has been inconsiderable. The water was formerly impure, and could only be obtained with difficulty in a country covered with pits and works. But the people, with commendable energy, have brought good waters from a distance, and are realizing the advantages of the change in Wolverhampton, Bilston and the other towns."

Since 1866 Asiatic cholera has not been able to extend or even to establish itself in England. Cases have reached our shores in 1873, 1883, and 1892, but in no instance has there been any extension beyond the first cases. Sanitary improvement throughout the country has grown apace since 1866. Taking only the last dozen years, the expenditure of upwards of £22,000,000 on water supplies, and of £12,000,000 on sewerage throughout the country, has been officially sanctioned by the local government board. Londoners, as the result in a great measure no doubt of the gigantic experiments to which they were subjected in 1854 and 1866, are supplied to-day with better filtered water than they were thirty or forty years ago. But we can not get away from the fact that more than half of the water is drawn from the open Thames and Lee, both of which rivers are polluted by sewage above the intakes of the water companies. A few years ago it was calculated by the late Sir Francis Bolton that the sewage of upwards of 70,000 people was delivered direct into the Thames or its tributaries above the intakes of the metropolitan water companies. Supposing a case of cholera could find its way amongst those 70,000 people, and the five and a-half millions supplied by the metropolitan water companies would be only separated from its dread influence by a possibly imperfect filter of sand.

### IMMUNITY OF WATER COMPANIES IN DISTRIBUTING POISONED WATER.

I am not quite sure what view the government now takes of the responsibility of water companies for the distribution of polluted water, but I remember very well that in 1871, when cholera was advancing rapidly through Russia, and Baltic ships with fatal cases of cholera upon them were already arriving from Cronstadt at Hull, Mr. Foster in making an official statement in the House of Commons as to the dreaded outbreak of cholera, made a singular remark, on which I made a note at the time and wrote in remonstrance, but without effect. It was worded thus: "Water companies should be mindful that the greatest disasters produced by cholera in this country have been due to their distribution of sewage-tainted water, and every care should be used by them in good time to prevent the recurrence of any such mischief. Their customers, too, should watch them narrowly." This is the extreme application of the principle of *caveat emptor*, which would probably not now be as generally approved as it was then, but I am not aware that in any case, however flagrant, a water company has been held either severely or criminally responsible for the poisoning of its "customers." I am not aware of any legislation which provides that they are or can be held to be liable for such malfaisance of duty. It is, of course, very different for purveyors of unsound meat or of unsound fruit or vegetables, who are duly warned, and by the provisions they are liable to heavy fines and penalties which are frequently imposed for selling damaged goods of the kind. I can not understand the distinction which enables water companies to slaughter on a large scale a helpless population, of whose supply of one of the first necessities of life they hold monopolies in their respective districts, while the smaller fry tradesmen and costermongers are treated with such severity.

### (B) EGYPTIAN EXPERIENCES.

In 1831 31,000 deaths from cholera are said to have occurred in Cairo, and Dr. Graves[3] mentions 150,000 as the estimate of the total mortality from that disease in the whole of Egypt in that year. Since then Egypt has been severely scourged by cholera at short intervals, but for our present purpose no reliable data are available earlier than the visitation of 1883. In that year the first cases of cholera occurred at the port of Damietta during June, became prevalent there on the 22d of that month, and before the end of the month had killed some 700 of its 30,000 inhabitants. Gradually declining in Damietta as July advanced, it invaded various towns of the Nile delta, and reached Ghizeh and Cairo by July 16. After July the disease lost its epidemic intensity, and appeared to be extinct by the end of September. According to Dr. Sandwith,[4] the physician to Kasr-el-Aini Hospital, Cairo, who has been able to collect much valuable information concerning the epidemic, 58,511 deaths from cholera occurred throughout Egypt among a population of 6,765,000. In Cairo, among a population of 371,576, there occurred 6,650 deaths; in Ghizeh, with a population of 283,083, there were 3,996 deaths; and in Damietta there were 1,927 deaths. The definite origin of the epidemic has been much disputed, though there has always seemed to me to have been ample opportunity for the introduction of the specific infection into Damietta. Once started, however, the condition of Egypt was exactly such as would favor the extension of the disease.

"There can be no doubt," says Dr. Sandwith, "that Damietta in 1883 possessed all the known requisites for engendering filth disease. In addition to the predisposing causes common to the rest of Egypt, a flat alluvial soil, soaked with decomposing organic poisons, drinking water soiled by every imaginable means, heated stagnant air, an apathetic population and a poverty stricken indifferent government, Damietta had unfortunately at least five other dangers, which affected chiefly the natives of the most crowded and insanitary part of the town. The richer inhabitants drew their water supply from cisterns filled from the Nile at its height, but the poorer folk, living in the quarter of the town where cholera was first seen and was most rife, were entirely dependent for drinking water upon a low Nile for several weeks below sea level, and therefore extremely brackish, or upon an open canal drain which ran through the town and received the sewage of houses on its banks, and also of the public latrines attached to many of the sixty mosques in the town. These conditions prevailed every May and June, but in 1883 must be added the wholesale contamination of the Nile by carcasses of cattle which had died of bovine typhus. One Englishman says that he removed during two months more than 2,000 carcasses in every stage of putrefaction, the greater number being from the Damietta branch of the Nile. The air of the town was in a very poisonous state, and was not improved by the depôts of stinking salted fish (*fisikh*) arriving from the neighboring lake of Menzaleh for the consumption of Damietta and the rest of Egypt. The last of the exciting causes special to Damietta, was the fair which immediately preceded the cholera explosion (June 13 to 20). Some 15,000 people had been allowed without any sanitary supervision to encamp on the outskirts of the town, and to overcrowd the existing 30,000 inhabitants. The wonder is, not that cholera appeared, but that any remained alive to debate its origin."

Speaking in 1884 of the water supply, Sir W. G. Hunter—who was one of the special commissioners sent out by the English government to inquire into and report upon the epidemic of 1883 in Egypt—remarked[5] that the larger majority of the people drink the Nile water unfiltered, and generally before it has been allowed time to deposit. "It is said that they prefer it in this condition. In Cairo the quality of the water supply is indifferent. At the waterworks there is but one settling tank, and as it is in constant use it can never be cleaned. The large amount of mineral water contained in Nile water while settling carries down with it no inconsiderable quantity of the organic substances held in suspension in the water, and must lead to rapid fouling of the tank. Filtration is effected by gravel and sand. In the Ismailia quarter—that is, the fashionable part of the city—and in the Boulaq quarter also, no attempt is made to filter the water, but it is supplied as obtained from the Nile. Close to the intakes of the Cairo waterworks, where some slight efforts, it is presumed, would be made to prevent pollution of the water, I have seen human and other animal excreta, fresh and stale, lying about in various directions, and men and women bathing and washing their soiled clothes in the river. This was by no means an uncommon sight. The water supplied to Alexandria is, on the contrary, of very good quality. The system, though much the same as in use in Cairo, is carried out in a much more efficient and thorough manner. Alexandria is the only town in Egypt which possesses a wholesome supply of water. The river and the soil have been polluted through countless generations, and the alluvium is almost as absorbent as a sponge. Wherever there is water, it is scarcely too much to say you may feel assured it has been fouled by man. The river is, I may say, polluted and fouled almost from its source. It is the means by which filth, garbage and dead animals of every description are disposed of. Every town and every village situated on its banks add their quota to the fouling of the stream, until at length, when it has reached its lowest level in June, it is found, as at Cairo and at Damietta, to be undergoing putrefactive changes; to present under the microscope the character of pond water rather than as a running stream, and to contain bacterioid organisms in considerable quantities." As a specimen of a quality of the water used by the villagers in Egypt, Sir W. G. Hunter quoted the following passage from a letter written on August 30, 1883, by Mr. Honman, one of the twelve medical gentlemen sent to Egypt by Her Majesty's government for service during the epidemic, respecting Mehallet-el-Kibir, a town of 28,000 inhabitants midway between the Rosetta and Damietta branches of the Nile: "The town has three mosques, the drain from one running through the town, quite open and with three feet of filth at the bottom. This discharges itself into a pool of water at the back of the town, which is used by the people for domestic purposes and as drinking water for their cattle. The other two mosques drain in a like manner into pools outside the town, and they also are used by cattle and for domestic purposes. The stench from these drains can be smelled all over the town."

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[3] Dr. Graves's Clinical Lectures, 1848, Vol. i, p. 397.

[4] Paper on Cholera in Egypt, read before the Seventh International Congress of Hygiene and Demography, held in London, August, 1891.

[5] British Medical Journal, January 19, 1884, p. 91.

In 1883 Alexandria was the only town in Egypt possessing a tolerably wholesome supply of water. That supply, however, was by no means altogether safe, and it was laid on to only some 4,000 out of the 16,000 houses in the town. Alexandria also possesses a system of underground sewers, but many of these structures were found to be in a neglected condition n 1883. Yet this town suffered much less severely han the rest of Egypt, only 916 cholera deaths occurring among its 225,000 inhabitants.

During the last ten years a great stimulus has been given to sanitary reform throughout Egypt, but the task is exceptionally difficult and the obstacles are many. Speaking of a visit to Damietta in 1891, Dr. Sandwith remarks that "the existing cisterns are cleaned out and refilled every year, and a large new one built by the government supplies the town for two months and a half. Moreover, a new circular fresh water canal has been excavated to bring Nile water from near Cairo, and the central canal drain of the town has been filled in and converted into a road. The river and the canal no longer contain dead bodies, and the local fair has been shorn to harmless dimensions."

It is unfortunate that the question of providing Cairo with a proper system of drainage is still in abeyance, the initial costliness of an efficient scheme being apparently the real cause of the delay. But there is a prospect of something being done in this matter ere long. The responsible authorities of Cairo, however, will be well advised if they put the sanitary condition of the town into a proper state without further delay, and take care to adopt the most efficient and permanent scheme for that purpose, even if it be at first a little more costly, rather than lay the foundations of future trouble by carrying out an imperfect or temporary scheme.

The water supply of the country is also still far from satisfactory, although the question how best to deal with so difficult a problem has for some time been receiving attention. The latest report of Lord Cromer, the British consul general for Egypt, on the administration of that country and the progress of reform in it, is very hopeful. Dr. Rogers Pasha, who is quoted by Lord Cromer, is able to say that an extraordinary and satisfactory change has come over the spirit of the mudirs and governors. "Two mudirs," he says, "have forwarded me schemes of important sanitary legislation, while all the mudirs and governors it has been my pleasure to meet are unanimous in recognizing the evils which exist, and the necessity for their being remedied."

### (c) FRENCH EXPERIENCES.

In 1883 some cases of cholera occurred in Marseilles, but by a conspiracy of silence between the municipal authorities, the attendant physicians and the nurses, their existence was for the moment concealed. In June, 1884, however, the disease broke out in Toulon, and a few days later cases were reported in Marseilles. On this occasion it was not practicable to secure the same secrecy as had been obtained in the previous year. The disease claimed some 30 or 40 victims daily in Toulon during the second and third weeks of July, and before it had entirely disappeared from the town, in the middle of November, it had caused over a thousand deaths there. At the same time it steadily spread in Marseilles. and during the second week of July, the daily mortality there rose to 70 or 80. Between June 27, when the first case appeared, and October 27, when the disease finally disappeared from that town, 1,777 deaths were recorded. Marseilles again suffered in 1885, 1,039 of its inhabitants dying of cholera during the year. Toulon also lost 314 inhabitants from the disease that year. Coming to more recent times, we find that between the middle of September and the middle of November, 1892, some 90 deaths from cholera occurred in Marseilles; and another outbreak of the disease, which the local authorities again strenuously endeavored to conceal, occurred in February, 1893, and caused nearly 100 deaths.

The sanitary condition of both Toulon and Marseilles at the time of the epidemic of 1884 and 1885 was scandalous. Reporting to the Comité Consultatif d'Hygiène Public de France on July 1, 1884, after an inspection of Toulon in company with Dr. Proust, Dr. Brouardel described[6] Toulon as "one of those towns where the laws of health are most imperfectly observed." He pointed out that the water, though originally derived from springs of good quality, was not free from suspicion of contamination before it reached the consumers, and he described at some length the unwholesome methods of filth disposal in vogue in the old quarters of the town, such as the general practice of casting the night soil each morning into the gutters, where, if, as was generally the case, the water was not abundant and the gradient sufficient, it pestilentially accumulated. A very similar state of affairs is disclosed by M. A. Dominique in his Historical Study of the Cholera Epidemics at Toulon.[7]

The insanitary state of Marseilles is also notorious. In a report on the epidemic of cholera in that town in 1884, M. Guérard, the engineer of the port, pointed out that the most neglected portions of the town as regards cleanliness were those that were most fatally affected, and he especially referred to the old quarters to the north of Port Vieux and behind the Rue Cannebière. Referring to the state of Marseilles forty years ago, when in the absence of sewers the Port Vieux became a receptacle for all the liquid impurities of the town, when local wells were in general use for the water supply, and when closets were but little known, all filth finding its way into the gutters, M. Guérard added that, with the exception of an abundant water service, the same description still held good for the old quarters.

But even at this time the water supply, though abundant, was, and is at the present day, far from satisfactory. Marseilles derives its water from four sources—the river Durance to the extent of 7,000 litres per second, the river Huveaune to the extent of 100 litres per second, the spring of La Rose, five litres per second, and the Grand Puits, which supply six public fountains. The water of the Durance is brought to Marseilles by a canal and aqueduct some eighty miles in length, and as it approaches Marseilles it is exposed to a variety of contaminations. At one point it passes through some flour and other mills, turning the water wheels in its course, and having corn washed in it. At another point it passes in open conduit through a populous locality. Moreover, at its best the Durance is but a turbid river. It carries down a good deal of vegetable matter in its course, and although its waters pass through settling tanks on its way to Marseilles, it is not filtered before its actual distribution. Some elaborate analyses of the Durance water have recently been made by Dr. P. David, of the 15th army corps, and show that in its unfiltered state it is by no means an altogether satisfactory water.

It is, however, the use of the water of Huveaune which is most dangerous. That water is drawn from the river near the village of St. Marcel, and a few kilometres only below the village of La Fenne and the town of Aubagne, the inhabitants of which cast all their slops and filth into the river. In an interesting report on the cholera epidemics of 1884 and 1885, M. Guérard[8] states that nothing in the observation of those epidemics "proves that the waters distributed in the town had any appreciable influence on the mortality from cholera." But at the same time he points out that at La Penne and Aubagne there had been numerous cases of cholera in 1885, and adds that "the use of waters from the Huveaune for domestic wants in the town of Marseilles could not have been without influence in the development of the epidemic in that town." Moreover, he shows that "the water of the Huveaune was drunk in precisely those quarters (of the town) in which the epidemics of 1884 and 1885 made the greatest number of victims."

As further showing the suspicion which very properly attached to the water supply of Marseilles at the time of the epidemic of 1884, the following circumstances recorded by Dr. Proust in his report[9] of December, 1884, on the cholera epidemic of that year in France, are instructive:

A French steamer (Ville de Palerme) left Pointe-a-Pitre on June 24, 1884, and arrived at Marseilles on July 17. It remained there from July 17 to the 24th—that is to say, during the worst days of the cholera epidemic. During its stay at Marseilles there had been no sickness on board; it was not until two days after the departure of the vessel from that port for Havre that the earliest cases of illness on board took place. Between July 26 and 29 five men on board were seized with cholera. The captain narrates that before arriving at Marseilles the steamer had taken on board a supply of water at Gibraltar on July 12, and, acting on the advice given him, there was consumed on board only the water taken at Gibraltar during the whole of the stay of his vessel at Marseilles. But on July 24, the day of the departure of the vessel from Marseilles, the Gibraltar water being almost exhausted, he had to refill his water tanks with the Marseilles water, and that was the water consumed on board after the evening of July 24. The captain himself remarked the coincidence of the appearance of cases of sickness on board with the first use of the Marseilles water, and also that these occurrences seemed to cease at the same time that he ceased to use that water. He gave his crew the water boiled and lightly alcoholic, and after that no new case of illness occurred.

As regards the outbreak in Marseilles in October, 1892, Dr. Brouardel has declared that it was principally due to contamination of the drinking water by sewage.

Happily, both for Marseilles and for the rest of France, as well as for the safety of the health of vessels trading with Marseilles, great works are about to be commenced for the general sanitary improvement of the town. Marseilles has obtained an unenviable notoriety as a focus of cholera, and the efforts at concealment which have always been made have not tended to strengthen public confidence in the good faith of the local authorities.

In the same report from which we have taken the particulars respecting the steamship Ville de Palerme Dr. Proust deals with the spread of cholera throughout the southern and southwestern departments of France in 1884, and, after detailing the facts respecting a great number of localities where the disease prevailed, he arrives at the following general conclusions: "1. The cholera has been imported into the towns and villages of the departments just mentioned. 2. Water has played an important part in its transmission. 3. The intensity of the epidemic has been in direct proportion to the unhealthy condition of the country. 4. The cessation of the epidemic in the localities invaded can in part be attributed to the adoption of sanitary measures and of means of disinfecting."

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[6] Recueil des Travaux du Comité Consultatif d'Hygiène Publique de France, tome 14, 1884, p. 203.

[7] Le Choléra à Toulon, par A. Dominique, Toulon, 1885.

[8] Recueil des Travaux du Comité Consultatif d'Hygiene de France, tome 16 (year 1886) p. 267.

[9] Recueil des Travaux du Comité Consultatif d'Hygiene Publique de France, tome xiv (year 1884) pp. 232, 233.

One of the epidemics included in Dr. Proust's interesting report is that which occurred at Yport, a little town of 1,700 inhabitants in the department of Seine-Inférieure. The facts are also given in a report[10] by that earnest sanitarian, Dr. Gilbert of Havre. It would appear that the department of the Seine-Inférieure had been already free from cholera until the disease was imported by the arrival there on September 28, of two of the crew of the Louise-Marie from the port of Cette. This vessel having arrived at Cette from Newfoundland, nine of the crew shortly contracted cholera, two of the attacks terminating fatally. After this several of the crew traversed France by rail, one dying of cholera on the journey. The personal effects of the remainder were at the same time submitted to some process of disinfection by a sister of mercy. One of the men who left for Yport had suffered from a cholera attack at Cette, and on the day following his arrival (September 29) his clothes were, with the aid of his sister-in-law, wrung out in water and hung up in front of certain dwelling houses. On October 4 this sister-in-law was suffering from diarrhœa, and on her return that day from having completed the washing of these clothes at the public "fontaine" she was seized with symptoms typical of the Asiatic disease and died. Cholera subsequently extended to the filthy narrow streets and bypaths, in which low dwellings, excavated in the sloping surface and having a natural soil for a flooring, supplied the place of houses. In all there were forty-two attacks and eighteen deaths at Yport, the last case taking place about the middle of November.

A very detailed account of the cholera epidemic of 1884 in France has been written by Dr. L. H. Thoinot of Paris, and a concise abstract of it is to be found in Dr. Shakespeare's report on cholera in Europe and India.[11] Dr. Thoinot's investigations go to prove very clearly that cholera follows watercourses, and especially those of little importance, such as torrents and small streams; that water is a means of propagating cholera for both short and long distances; that the cholera manifestly develops around wells or fountains, the water of which has been contaminated by the choleraic germs; that if there exist two kinds of drinking water in a neighborhood, one infected and the other free of all infection, the cholera will attack the neighborhood of the first, but will spare absolutely, or notably at least, the neighborhood of the second; and that cholera is transmitted by linen and clothing contaminated by choleraic dejections. Each of these propositions is fully borne out by the details of the epidemic of 1884. Reviewing these epidemics Dr. Shakespeare remarks that "the disease seems to have spread from place to place by means of soiled personal effects, by small watercourses which had become contaminated with choleraic discharges, or the washing therein of soiled linen, and by the movements of persons experiencing an active or a latent attack of cholera. By these means the disease reached and found a lodgment in many places in the interior of France, remote from the districts at first affected."

The department of Finistère furnishes, unfortunately, a very vivid lesson in the spread of cholera by dirt and polluted water. In that northwestern corner of France the population are poor, very ignorant, and often greatly addicted to intemperance; the soil is filth-sodden and permeable, the water supplies are almost entirely derived from surface wells, imperfectly protected and readily liable to receive specific contamination, and the arrangements for filth disposal are of the most primitive and old world character. Here then are to be found all the accessories needed for a widespread cholera epidemic, and here cholera has ravaged the simple folk in 1832-33, 1834-35, 1849-50, 1854-55, 1865-66 and 1885-86. Whenever cholera has visited France, Finistère or its neighbor, Morbihan has been an early and great sufferer. An exceptionably interesting report of these epidemics, dealing in great detail with that of 1885-86, has recently been written by Monsieur Henri Monod,[12] who is now Directeur de l'Assistance et de l'Hygiène Publiques, but was formerly the Prefect of Finistère. This is how he refers to the water supply of the department: "With rare exceptions the water drunk in Finistère is that of wells; but nearly everywhere the soil is composed on the surface of very permeable calcareous sand. The drinking waters are therefore exposed to infiltrations to whatever flows or rests on the soil becoming impregnated with decomposing matters along the roads and at the corners of the houses. Sometimes even streams after they have passed through all sorts of filth flow directly into the wells, which are destitute of kerbs. The inhabitants know it, they see it; treating it with indifference they do not use the less of it, but drink philosophically a water which will make them ill only if destiny has thus ordained. Consequently, water seems to have contributed to the propagation of cholera on the one hand in disseminating germs of cholera by the streams, by the washing fountains (*les fontaines lavoirs*) by the watercourses of every description, and on the other hand, in introducing those germs into the human organism by the drinking waters. The communes which can be cited as having had the wells particularly infected are those of Douarnenez, Plouhinec, l'Ile de Sein, Guengat, Guilvinec and Quimper. Those who think that water fills in the course of a single epidemic of cholera the double *rôle* of carrier of morbid germs and a direct agent of their introduction, will undoubtedly derive an argument from the precise occurrences in these last two communes."

This outbreak in Finistère was also investigated officially by Dr. Proust,[13] and his opinion is exactly similar to that of M. Monod as to the very conspicuous part played by water in the dissemination of the infection. As regards Guilvinec, where between October 1 and December 24, 1885, 71 fatal and 54 non-fatal cases of cholera occurred among a population of 1,968 Dr. Proust states that "almost all the villagers use, for drinking, water furnished by a tank called a fountain situated in the center of the Quartier du Palus, a reservoir which is only a well, and by other wells at different points. This water is the infiltration through the superficial strata. The turf and the sand form a layer of not more than one metre above the impermeable granite. Hence this water is contaminated by all kinds of organic matters, fecal and otherwise, which cover the soil in profusion, and at the time of the epidemic by choleraic matters which it has never been customary to throw on the beach, and which even when disinfected were buried near the dwellings at a depth of fifty to sixty centimetres. It is to be remarked that in two or three houses where rain water is used no case of cholera was observed. But what is still more worthy of interest is the fact that near Guilvinec small villages built on the rock have been free from the epidemic. In one of these villages there were two imported cases, but the disease did not spread. A still more striking example is that furnished by the occurrences at Léchiagat, a village which is separated from Guilvinec by a narrow arm of the sea uncovered at low tide. In 1886 that village had no cholera, although Guilvinec was affected; and although during that year it served as a refuge for a number of the inhabitants of Guilvinec, the disease did not spread in it. But the inhabitants of that village drink water from an irreproachable source, which they found at a distance of two kilometres. Sometimes they drink rain water, but never well water. This little village has always been free from epidemics, whilst small-pox, typhoid fever, and cholera have prevailed on different occasions at Guilvinec."

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[10] Le Choléra a Yport,-par M. le Doctr. Gilbert; Revue Scientifique du Decembre, 1884.

[11] Report on Cholera in Europe and India. By Edward O. Shakespeare of Philadelphia. Washington, 1890.

[12] Le Choléra; Histoire d'une Epidémie: Finistère, 1885-6. Annexe aux tomes xix and xx de Recueil des Travaux du Comité Consultatif d'Hygiene Publique de France. Melun, 1892.

[13] Recueil des *Travaux du Comite Consultatif* d' Hygiene Publipue de France, tome xvi (year 1886), pages 68 et seq.

But by far the most important extension of cholera in France in 1884 was that which affected the western suburbs of Paris, and subsequently that city itself in November. A few deaths had taken place in Paris between July and October, but the first case of the more important outbreak did not occur until November 3. During the following days of that month, the deaths respectively were 1, 3, 18, 14, 28, 76, 95, 96, 79, 83, 65, 70, 45, 36, 47, 28, 34, 25, 15, 19, 10, 14, 8, 3, 11, followed by a rapid daily decline.[14] Between November 3 and December 5, 946 deaths had occurred in Paris. These figures are very suggestive, even by themselves, of a sudden and temporary agency being at work, such as the contamination of the water supply, and although the outbreak does not seem to have been officially reported upon in detail, I have excellent reasons for believing that it was due to the temporary distribution of a highly polluted water to particular districts of the city.

In 1892, Paris, more especially again in its western and northwestern suburbs, was once more somewhat severely visited by cholera. On April 4, the disease broke out in a crowded prison at Nanterre, to the west of Paris, and ere long it had caused in that institution 49 deaths out of 51 attacks. The disease soon spread through the neighboring districts of Suresnes, Puteaux, Neuilly, and Argenteuil. In May there were ten deaths, in June 19, in July 78, in August 211, in September 535, in 535, in October 102, in November 6, and in December 16, making in all a total of 977 deaths during the year. The greater part of this mortality occurred, as already mentioned, in the suburban districts to the west and northwest of Paris, it being, in fact, late in the autumn before any considerable number of deaths took place within the city fortifications. There is a very general concensus of opinion that the consumption of the Seine water was at the root of this serious outbreak, as it has been at the root of previous epidemics. A considerable portion of the Parisian water has been drawn from the Seine near Charenton, but before the intake at that place is reached the river has received, at Choisy-le-Roi, Vitry, and a host of other places, the contents of numerous sewers, etc. Drinking such water is bad enough, but when it is considered that the suburban districts in the west and northwest—those districts, in fact, where cholera raged last year, and where also it began in the epidemic of 1884—draw their water from the Seine, after it has passed through Paris, and been fouled by steamer traffic, by the filth from the clothes and linen washed in its floating washhouses, by the innummerable private sewers at Sèvres, Neuilly, and elsewhere, and by the discharge into it of the contents of the main sewers of Paris at Asnières and St. Denis, one need not wonder at the spread of cholera once introduced. Happily the works which have been in progress for improving the water supply of Paris by the addition of pure water from the Vigne are to be completed in the spring of the present year (1893), and the suburbs are to have their supply of Seine water drawn where that river is not tainted by Paris sewage, and are also to have it filtered through sand and iron before use. The need for some drastic measures of this kind has long been apparent.

### D.—ITALIAN EXPERIENCES.

It is to Marseilles and Toulon that Italy is indebted for the severe epidemic of cholera which swept over the country in the autumn of 1884. When cholera broke out in the neighborhood of Marseilles and Toulon, numbers of Italian workmen who were then employed in that neighborhood fled across the frontier into their native country. Strenuous efforts were made to enforce land quarantine against them on the frontier, and thousands of travelers were in consequence detained in lazarettos at Ventimiglia, San Dalmazzo, Bardonnechio, Saluzzo, Pinerolo, and other places; but in spite of bayonets and bâtons, this theoretically perfect but practically discredited method of withstanding the march of infection once more utterly failed; and a great many frightened and unwholesome fugitives, bearing with them in their persons or in their filthy clothing or chattels the germs of the disease, succeeded in evading the cruel police cordons. By July 22 it was alleged that cholera had broken out at Spezzia, having, it is said, been introduced by arrivals from Toulon. Many of the inhabitants of Spezzia at once fled terror-stricken from the town. Gradually the disease spread through the provinces of Turin, Massa, Parma, Bergamo, Cuneo, on to Campobasso and Cosenza in the south of the kingdom. Before the end of the year some 27,000 attacks of cholera and upwards of 14,000 deaths had occurred, at least forty-four out o the sixty-six Italian provinces having been visited.

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[14] Recueil des Travaux du Comite Consultatif d'Hygiene Publique de France, tome xiv, Paris, 1884.

It was in the city and province of Naples that the severest outbreak of the disease occurred. There is a general agreement that the infection was introduced from Marseilles by Italian workmen and sailors, although there may be some doubt as to which of several channels was actually the earliest in operation. According to the United States consul, some fifteen Italian sailors sailed from Marseilles, and arrived in Naples about the end of July. At the time of landing their presence was unknown to the municipal authorities. They passed one night in the Strada di Porto, but, being discovered, they were sent back to their ship and left, presumably for Palermo. Their stay, however, was thought by some to have been long enough for them to have sown the seeds of the disease in Naples; but, according to the British consul, the cholera was most probably introduced by sixty-five Sicilian workmen who, having crossed the frontier from Marseilles, were detained in quarantine for some prescribed period on a floating hospital at Spezzia and thence were shipped to Naples, where they arrived on August 3, and took up their quarters in the Porto district, one of the most squalid and insanitary quarters of the city. On August 6 and August 18 other similar detachments arrived. One man, who arrived on the latter date, put up in the Marcato district another of the worst parts of the town and, sickening with cholera the same night, died within forty-eight hours. Other cases followed, producing in the circumstances well-founded anxiety; but it was not until September 1st that the disease broke out with sudden and considerable violence. On that day there were sixty cases and twenty deaths notified; on the next day there were 127 fresh cases and sixty-five deaths; and so on until on September 11, 949 fresh cases and 357 deaths were announced. This was followed by 848 fresh cases and 386 deaths on the 12th, and 693 fresh cases and 231 deaths on the 13th, after which there was a gradual decrease in the daily numbers until the epidemic practically ceased early in November. Between August 23 and November 9 some 12,345 cases and 7,086 deaths had occurred among a population of 492,908.

Any one who has visited Naples must, while charmed with the unequalled natural loveliness of its magnificent site, have been struck by the squalor and unwholesomeness of the place. After visiting the town just before the epidemic of 1884, I was driven to describe it as the dirtiest, raggedest, most obscene and squalid city of Europe. There was hardly anywhere to be seen a population more poverty stricken, more miserably housed, more filthy in their habits. The atmosphere of a great part of the town was an infection, the defilement of the streets was unspeakable, the mortality of the city was excessive, although it is surprising, almost incredible, that it was not greater. When, therefore, cholera reached Naples in 1884 it found a most congenial resting place, and in the peculiar water supply arrangements in vogue there was the most complete provision for its indefinite extension. That peculiar system, and its relation to the nastiness of the domestic arrangements, are clearly described by Dr. Shakespeare in his interesting work on cholera. He points out that the houses of the poor quarters are many stories in height, and are tenanted by families who live in flats. The upper flats are constructed upon the same plan as the lower ones, the kitchens of all being directly over each other. The water closets, when they exist, usually occupy one corner of the kitchen and connect by untrapped pipes with the main perpendicular drain, which leads to a *pozzo nero*, or sort of filth receptacle in the basement of the house. It is usually only the overflow of the fluid contents of the *pozzo nero* which enters the main house drain and passes to the street sewer. The walls of the *pozzi* are usually very imperfectly, or not at all cemented, the floor of the sink being formed by the porous earth. The solid accumulations in the *pozzi neri* are not often removed more than once a year. In most of the large houses there was at least until 1885, as already stated, a very peculiar individual provision for water. Running water flows in masonry trenches from house to house, ordinarily a little underground. In the course of the trench, as it passes beneath the house, there is a cistern sunk beneath the bottom of the trench, in order to form a species of water reservoir for household purposes. This reservoir is usually located in the part of the building immediately under the kitchens of the various floors, and is in communication with them by means of a bucket attached to a rope which runs over a pulley at the top of the house, so that the occupants of the various stories can draw the water without the necessity of descending to the ground floor. The location of these reservoirs is therefore frequently in close proximity to that of the *pozzi neri*, and, from what has already been said of the construction of these *pozzi neri*, it is easily understood how filtration from them must unavoidably reach and contaminate the water of the reservoirs. And the fact that the water trench passes from house to house and directly communicates with the reservoirs explains how, in houses where the *pozzo nero* and the reservoir are quite distinct, the water drawn from the reservoir is often necessarily contaminated by the *pozzi neri* of houses up stream.

Besides this household provision of water, there is also a public supply by means of a comparatively limited number of public fountains in the streets and public squares. The majority of the inhabitants recognize the fact that the water of the public fountains is of a better quality for drinking purposes than that drawn from the reservoir within the houses, and those living on the ground floors and not too far distant from the nearest public fountain habitually resort to the fountain for their drinking water, using, however, the reservoir water for other domestic purposes. Dr. Shakespeare notes in connection with this practice the curious fact that during the prevalence of cholera in Naples in 1884, and, indeed, in nearly all of the preceding epidemics, contrary to the customary rule in cholera epidemics in most parts of the world, persons dwelling in the upper stories suffered the most severely from the disease. The explanation of this fact is patent. The ease with which those people could obtain water from the reservoir, and the inconvenience of resorting to public fountains, caused them to use water which was by far the most likely to be contaminated by cholera discharges.

In addition to the contamination of the reservoir water by cholera discharges which might reach the *pozzo nero*, in not a few instances the reservoir water was further contaminated by the reckless practice of washing linen soiled with choleraic discharges in the trenches of running water beneath the houses.

It is difficult to realize the fact that such a system as this—a system which could scarcely be better designed for the most effectual distribution of disease—was to be found towards the close of the nineteenth century in such a populous and important city as Naples. Fortunately the danger was at last recognized in 1884, and in the following year pure water was brought into the city from a mountain stream—the Serino, eighty miles distant—and was very generally distributed through iron pipes under pressure. At the same time the old system of distribution by water trenches coursing beneath the dwellings was, to a great extent, done away with. Neither in 1885 nor in 1886, notwithstanding the existence of cholera in the vicinity and the not infrequent arrival of refugees from cholera stricken localities, did Naples suffer from even limited epidemic outbreaks of the disease. This was true also of the year 1887, until, in consequence of a break in the new water conduit from the distant mountain stream, recourse for a few days was had very generally to the old water system. At this time there were numerous refugees in the city as, in fact, there had been for weeks past from various places in southern Italy and Sicily, including several suburban towns where cholera was more or less prevalent. Moreover, there were, and had been, almost constantly occurring a few isolated cases of the disease among these refugees without, however, a local epidemic being produced thereby. But very soon after the interruption of the supply of the Serino water there were one or two quite sharp explosions of local epidemics around some of these cases. The speedy repair of the Serino aqueduct enabled the municipal authorities again to turn on that pure water throughout the city, and, practically coincident with that action the local epidemics, which had occasioned so much alarm, ceased almost as suddenly as they had begun.

It is interesting in this connection to note that there has been a marked decrease in the prevalence of enteric and typhus fevers since the introduction of the new water service into Naples.

The disease reached the city of Genoa in September, 1884, and the severe epidemic which immediately ensued is one of the most interesting and conclusive examples recorded of the spread of cholera by water—by water, moreover, which was of exceptional natural purity until the moment it received the specific infection.

A few sporadic cases of cholera occurred in Genoa during the first fortnight of September; but immediately following the 21st of that month the disease suddenly and rapidly spread, there being 9 cases on September 24, fifty-two cases on the 25th, 42 on the 26th, 38 on the 27th, 47 on the 28th, 64 on the 29th, followed by a rapid decline to 59, 40, 22, 21, 23, 22, 12, 13, 10, 5, 6, 3, 6, 2, 5, 7, 0, 1, 4, 4, the last case occurring on October 20. The deaths during the days following September 22 were 2, 2, 18, 32, 27, 37, 47, 30, 19, 25, 28, 20, 22, 17, 10, 10, 13, 10, 10, 10, 3, 6. These figures are themselves very suggestive of a water influence, and this explanation of the epidemic spread was strongly confirmed by the circumstance that, during the early days the disease not only attacked indifferently the poorest and the richest quarters, but was also singularly disseminated throughout the whole city. In the penal Bagno di S. Giuliano, an isolated place where the prisoners are kept in strictest confinement, there were five cases in the first five days of the epidemic, and at the same time the disease made headway upon the heights of S. Benigno at 80 metres above the level of the sea. In every part of the city there were attacks, without distinction of the density of the population, or of social status, or of hygienic conditions or precautions. The dissemination was so general that the first 300 cases were found to be scattered along 158 different streets of the city.

Early in the epidemic a resident physician, an old friend of mine, whose acquaintance I had made when I organized and despatched, with his aid and that of Dr. Wolfe, a convoy of medical succor to the army of Garibaldi on his famous expedition from Sicily, telegraphed to me from Genoa: "Your water theory of cholera at fault. Genoa has a fine supply of pure water from a high mountain source. Cholera has broken out in districts so supplied, and we have already 100 cases a day. What is to be done?" I replied by telegraph: "Can not be at fault; must be water; can not be anything else; examine every foot of your water pipes, and trace to the supply pipes' source." Genoa, it may be remarked, is supplied by three aqueducts—the Civic and the Galliera about fifteen miles long, fed by the river Gorgento, and the Nicolay about thirteen miles in length, and supplied by the river Scrivia. An analysis of the first 50 cases of cholera in the city disclosed the fact that as many as 44 were in houses supplied with Nicolay water; of the 50 succeeding cases 43 dwelt in houses supplied with Nicolay water; and of the third group of 50 cases, 45 were in houses so supplied. In fact, out of the first 300 cases, as many as 93 per cent. inhabited houses in which the Nicolay water was distributed. Further, although the poorhouse of the town is in a very crowded center, no case of cholera occurred in it, as the authorities of that institution cut off the Nicolay supply. Again, taking the Via Bianchetti, cases of cholera occurred on the side which was served with Nicolay water, while there was not a case on the other side, which had water from a different source.

Thus the Nicolay water stood convicted, and on further investigation the mystery was readily solved. Near the beginning of the Nicolay aqueduct is the village of Busalla, and at the time in question some hundreds of workmen including, there is reason to believe many refugees from infected localities, were engaged on a new railroad and are described as living in the most filthy conditions. Cholera broke out at Busalla on September 14, and several cases thereafter daily occurred until the end of the month. Inquiry disclosed the fact that nearly all the workmen, both the sick and the healthy, had their clothes washed in the Scrivia, or in a tributary of that stream, which supplies the Nicolay aqueduct with its water.

As soon as these facts were known the mayor of Genoa, with very commendable promptitude and decision, prohibited for a time the distribution of the water of the Nicolay aqueduct, or rather the distribution by that aqueduct of the water of the Scrivia. This was done on September 28. On September 30 the cases of cholera fell from sixty-four to fifty-nine, and, as already shown, during the succeeding days the number of cases suddenly dropped to 40, 27, 22, 21 followed by a rapid decline to *nil* on October 17.

In 1885 cholera occurred in various parts of the mainland of Italy in the provinces of Ferrara, Genoa' Massa, Modena, Parma, Reggio Emilia, Rovego, Trepani, Venice and elsewhere. But the severest visitation that year was at Palermo, in Sicily. Into that town, which has been richly endowed by Nature but has been rendered most unsavory by man, the cholera was imported from Marseilles by the steamship Salunto, in spite of the fact that that vessel had been subjected to seven days' quarantine in the Gulf of Assinara. Between August 23 and 25, 1885, a woman living in a little street in Palermo received, for the purpose of washing, a parcel of linen which had been sent to her husband, a sailor on board the Salunto. That woman, after having washed the linen, was seized with vomiting and diarrhœa. On the following day a young woman who lived with her developed the same symptoms, as did also several other women in the neighborhood during the next few days. On September 13 there were thirteen cases and four deaths, on the 14th there were thirteen cases, on the 15th seven cases; but on the 16th the number of cases suddenly sprang to 36; on the 17th to 132; on the 18th to 221; and on the 19th to 258. From that date the disease began slowly but gradually to decrease until the middle of November, by which time 5,535 cases and 2,959 deaths had occurred in Palermo among a population of about 275,000.

The opportunities for the spread of the disease when once introduced into Palermo were very similar to, though much more pronounced than those in Naples. The water supply is brought from the surrounding hills, usually in open trenches of masonry. Within the town these trenches are sometimes uncovered,or they pass beneath the houses,in the basements of which there are traps in the top of the water trenches for the purpose of enabling the water to be taken from them direct. There are also a number of public fountains throughout the city supplied by this running water, and there are many wells exposed to all the most filthy contamination. The washing of clothing is very common in the water trenches, both before and after the city limits are reached.

The habits of the people are of the most filthy character, and in the presence of the cholera the ignorance and superstition of the populace greatly harassed the authorities and increased their difficulties. It is owing in great measure to the enlightened and vigorous action of Dr. Albonesi, who was appointed director of the local sanitary council, that the early termination of the epidemic is mainly due. That Dr. Albonesi thoroughly understood the methods by which cholera spreads is shown by an eloquent pamphlet which he published shortly after the epidemic on the duties of governments and countries during epidemics. He directed the closing of all wells in the affected localities, and inaugurated thorough cleansing operations of all kinds. The closing of the wells was followed by the decline of the epidemic. On his advice also the boiling of the water before use was very generally adopted by the more intelligent inhabitants, and with marked benefit as regards their immunity from infection.

I have only given details of the three greatest outbreaks in Italy in 1884-85, but every community throughout the country that was attacked by the disease taught the same lessons.

### (E) SPANISH EXPERIENCES.

In 1885 Spain was the seat of a cholera epidemic of exceptional ferocity, which, having sprung from a few initial imported cases, rapidly embraced the greater part of the peninsula. There is, unfortunately, little sign at present that Spain herself has profited from her terrible lesson, but for those who wish to master the mysteries of cholera, the Spanish epidemic of 1885 illustrates clearly the futility of so-called quarantines, both on sea and on land, and the potent agency of rivers and streams, once infected, in spreading the disease for long distances, when the populations living on their banks drink their waters.

The earliest cases of cholera occurred in Alicante, on the southeast coast, towards the end of August, 1884. There is, as usual, some conflict as to the exact manner in which the infection first reached Spain. According to one account, a family of Spaniards returning from Marseilles was responsible. That family sailed from Marseilles to the French province of Oran, on the northern coast of Africa, where they procured transport for themselves and for their personal effects to a maritime village near Alicante. They successfully evaded the surveillance of the Spanish quarantine officers, and carried, it is thought, the germs of the disease with them. According to another version, the disease was brought by a vessel from Algiers, which, after performing a week's quarantine at Alicante, proceeded to land her passengers. Among the latter was a family from Cette, which took up its abode in the house where cases of cholera subsequently appeared. During the third week of September isolated outbreaks occurred in the province of Tarragona, also bordering on the Mediterranean, and in the neighboring provinces of Lerida and Saragossa. Later on, in November. cases cropped up in the coast province of Valencia and in the inland province of Toledo.

The disease slumbered through the winter around Gandia, in Alicante, and in the following April broke into an epidemic at Játiva and Alcira. From these quarters the disease was soon carried far and wide by the laborers who usually disperse in May from the rice plantations of Valencia. Henceforward sanitary cordons and such like measures failed to stay the march of the epidemic; indeed, in some instances they seem to have had the contrary effect. Without attempting here to follow that march step by step, the result may be summarized from a tabular statement issued in May, 1886, by the Spanish minister of the interior. It appears that between the first cases of the disease notified on February 5 in the province of Valencia, until the last cases notified on December 31, 1885, in Salamanca and Cadiz, 2,247 local governments ("ayuntamientos"), included in 46 provinces, and having an aggregate population of 6,576,641, had been invaded, 338,685 cases and 119,624 deaths having occurred among them. The population which escaped the scourge is stated to have been 10,396,839, distributed among 7,067 local governments.

Sanitation and domestic hygiene are of a very primitive description in Spain, if indeed they can be said to be at all regarded by the bulk of the population. The streets and roads of the towns and villages, and the back yards of the houses are, without any consideration for decency or health, made the depository of nearly all the fecal and other filth of the population; the dwellings of all but the wealthiest are old and unwholesome, with frequent accumulations of filth close beside them; and drainage properly so called may be said to be non-existent, only a very few of the largest towns possessing any system of drainage whatever.

The open rivers and streams are the usual sources of water supply, and in Valencia and some other provinces the open agricultural irrigation canals serve also for the domestic supplies. But these rivers and canals too often serve as public sewers, and, as in France and Italy, the washing of clothes is usually performed in them. In some cities and towns there are also wells; but, apart from their being sunk in a recklessly polluted soil, there is seldom any attempt made to protect those wells against infiltration of the filth which so often surrounds them. In Murcia and Andalusia there is still the old Moorish custom of storing water in huge earthen jars. These jars are sometimes to be found ranged around the house courts, reminding one of tales of the Arabian Nights, but often they are sunk beneath the floor of the yard where they are in close proximity to the *cloaca negra* or cesspit of the establishment, and are liable to receive the overflow or soakage from it. These *cloacas negras*, it may be added, when they exist receive all the fecal and other filth of the household, and their contents usually soak away into the surrounding soil.

In a work published in 1886, on cholera in its relation to water,[15] Mr. George Higgin has dealt very clearly with the Spanish epidemic of 1885, and by comparative pictures of the circumstances of several typical towns, he has graphically and conclusively shown that it was *par excellence* a waterborne epidemic that, specifically infected, more than any other unwholesome circumstance was the cause of the fearful mortality and misery which then spread throughout the length and breadth of the peninsula. He shows that this formidable disease never became truly epidemic or dangerous in any Spanish city in which there was a pure and good supply of water, and where proper means were taken to guard against the sources being polluted by any of the specific choleraic poison. He shows how, in this way, the cities of Toledo, Seville, Malaga and Madrid escaped comparatively lightly, while such places as Aranjuez, Saragossa, Granada and Valencia suffered very severely.

Taking Madrid, it is noticeable that out of a population of 397,816, there were only 2,207 attacks and 1,336 deaths, or barely as many as occurred in a couple of days in the previous epidemic of 1865. The water supply of the town is derived from the Lozoya river among the Guadurama mountains, and was completed shortly before 1865. The greater part of the drainage was also then completed, but at the time the new water supply had scarcely come into use, the large majority of the houses being supplied from the old fountains which existed in various parts of the city. During the last twenty-five years the use of the Lozoya water has become very general, and an ample supply has been provided for washing the streets and flushing the sewers. Madrid is well drained, but the means of disposing of the sewage is very unsatisfactory.

When the existence of cholera in Madrid was recognized in 1885, one of the first acts of the municipality was to attend to the water supply. There existed 11 ancient sources which supplied 85 taps or fountains, 22 of which were public, and at which water carriers were allowed to fill their barrels, while the remaining 63 belonged to groups of houses. In spite of the excellent supply brought in from the Lozoya, these old sources were still a great deal used by the inhabitants—many, from old habits, preferring to use the same water which their fathers had used, while many were not willing to incur the expense of laying on the new supply. In view of the impossibility of effectually guarding against the possible contamination of some of these sources of supply, the municipality, by decree, closed all of them except one. The central government undertook the custody of the Lozoya aqueduct, and during the whole time of the existence of cholera in the city the uncovered portion of that aqueduct was patrolled by armed guards, no one being permitted to approach it without special order. There is every reason to attribute to these energetic measures the comparative immunity of Madrid from cholera during the epidemic of 1885. Such cases of the disease as did occur in the city seemed to be associated not with the water, but with the outfalls of the sewers, around which they seemed to cluster.

Toledo, the ancient capital of Spain, now having a population of about 20,000 differs widely from Madrid, its sanitary arrangements being much worse. It was supplied with water from the river Tagus, which flows round the city, the water being lifted by pumps. Above Toledo, on the same river, is situated Aranjuez, and above that town again, on the Manzanares, which is a feeder of the Tagus, is situated Madrid. In both of these latter towns cholera existed in 1885, being unusually severe at Aranjuez. The governor of Toledo, recognizing the suspicious character of the water, promptly stopped the pumps and obliged the inhabitants to send for their drinking water to a distant spring, and even forbade any one to bathe or wash clothes in the river. The measure was a strong one but it saved the city, for there were not more than 200 cases there during the epidemic.

Next, Mr. Higgin points to Seville, the third city in Spain, with a population of 134,000, and with very bad sanitary arrangements. There is no proper drainage, and the city is not healthy. The town, however, possesses an excellent and well protected water supply. But one of the suburbs of the city called Triana, containing about 30,000 inhabitants, is situated on the western side of the river Guadalquiver, which is fed by the rivers Darro and Genil which flow through Granada, and the poor in this suburb drink generally the water of the river. The Seville authorities, however, in good time prohibited the use of any water from the river, either for dietetic or other purposes. The result was that Seville practically escaped the disease, although it raged fearfully in Granada higher up the river, and descending the river Genil, which runs through Granada, attacked the towns of Herera, Ecija, and others in the province of Seville. It broke out also at Cordova and other towns on the Guadalquivir, of which the Genil is an affluent, and it appeared in Palma, Utrera, Puerto Real, Puerto Santa Maria and Cadiz, forming a circle around Cadiz, but the city itself escaped almost completely. Xerez, which lies between Seville and Cadiz, and possesses an excellent water supply, also escaped the disease. Malaga, which is in a bad sanitary condition, except that it has been provided with an excellent water supply, also escaped very lightly.

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[15] Cholera in its Relation to Water Supply, by George Higgin, 1886.

Taking now some towns which were severely visited by the cholera, it is seen that Granada, with a population of 76,000, has bad sanitary arrangements, only a tithe of the houses being drained. The water supply is from the Genil and Darro rivers, to which we have already referred. A small portion is supplied from a spring. The canals carrying the water from the rivers are uncovered, and exposed to all kinds of contamination. The cholera broke out in July, spread with frightful rapidity, and by the middle of August over 450 cases a day were officially recorded. No attempt had been made, as at Toledo, to suppress the old water supply. From Granada the course of the cholera may be followed down the rivers Darro and Genil, the infected waters carrying death wherever they were used for drinking purposes.

Murcia, with a population of 91,000, from which the cholera was imported into Granada, suffered heavily also. The disease was carried into the plains of Murcia by the waters of the river Segura from the baths of Archena, it having been imported into Archena by some invalid soldiers from the infected districts around Valencia. The plain of Murcia is irrigated by the waters of the Segura, and the disease commenced in this district with the death of a laborer who had drunk the water of one of the irrigation canals. The epidemic raged principally among the little cottages scattered thickly over the plain.

According to Mr. Higgin, no case in reference to water supply is so instructive as that of the town of Valencia. This city is fairly well drained, as drainage goes in Spain. The water supply is derived from the river Turia, is passed through sand filters, and is stored in a covered reservoir. When cholera broke out in the spring of 1885, it came very near Valencia, but did not touch it. At last, in the middle of May, having crossed the water supply of the city and thoroughly infected the river, it fiercely attacked Valencia, and by the end of June the number of cases had risen to 700 a day, among a population of 143,000.

The experience of Saragossa is also instructive. Its principal water supply is derived from the Aragon canal, which in its turn, is fed by the Ebro, near Tudela. The water became infected, the disease broke out in Saragossa, and some 10,000 cases occurred among a population of about 84,000. The preventive measures adopted by the authorities unfortunately came too late.

These cases could be multiplied almost indefinitely, and the same lessons be learned from them.

### (F) RUSSIAN EXPERIENCES IN 1892.

The complete history of the cholera epidemic in Russia in 1892 remains still to be written, but what we know of it bears out previous experiences as to the influence of infected water. We venture to take the following extract from some very interesting papers on the subject which have been written by Dr. Frank Clemow[16] of St. Petersburg. Speaking of the distribution of the epidemic, Dr. Clemow says that "the experience of last year's epidemic has added a large body of evidence to that furnished by earlier outbreaks upon which conclusions may be founded as to the means by which cholera is spread from one district to another. In tracing the disease from its first introduction across the Persian frontier throughout the Russian empire it has, I think, been clearly shown that cholera followed the main lines of human communication; and that where these lines coincided with a great river—such as the Volga—the spread of the disease was much more rapid than where communication was mainly by railways. These were the conclusions to be drawn from the behavior of the epidemic as a whole. The object of the present article is to bring together evidence as to its behavior in individual cases. The evidence has been collected from various sources, but principally from the discussions at the conference on cholera held in St. Petersburg last December, and from the medical and lay press at the time of the epidemic. In almost every instance that has been recorded where the means by which the infection was carried was known the course of events was somewhat as follows: A person coming from an infected district to one that has hitherto been free from the disease, sickened with cholera soon after his arrival. The earliest subsequent cases in the town or village occurred among members of the household of the first patient, among persons who had been in contact with the first patient or with articles soiled by him, or among persons who had drunk water from sources polluted, directly or indirectly, by the dejecta of the first patient. I may be pardoned for giving in detail the following instructive histories: In the village of Ulybyshef (Vladimir government) a laborer arrived on June 29 from Kazan where he had attended the funeral of his brother, who had died from cholera. Three days later he sickened with the disease in the morning and died in the same evening. The clothes he had worn remained in an outbuilding for a week. They were then washed in the stream from which the village drew its water supply. In a very short time cholera became epidemic throughout the village. In the government of Viatka, five villages situated along the banks of the same stream were invaded by cholera. The infection was traced to the systematic washing of linen, belonging to the early cases in the stream which provided the inhabitants of all the five villages with their drinking water. No sooner was this practice forbidden than the epidemic began to abate. In the village of Upper Moulla (Penn government) an exactly similar relation of cause and effect was recorded. The linen of cholera patients was washed in a pond. From the same pond the inhabitants drew their supply of drinking water, with the result that cholera raged throughout the village. As in the last instance, as soon as the washing of linen in the pond was put a stop to, the number of cases of cholera in the village began to diminish. In the village of Borki (Samara government), lying on the river Samarka, the first case of cholera was that of a woman. After a short interval a peasant was seized with cholera upon a barque lying at anchor a short distance further down the river. The disease then became epidemic solely among that portion of the population which drew its drinking water from the river. The remaining inhabitants, who drank water obtained from wells, remained free from the disease with but one or two exceptions. In Great Bereznikof, a village in the Simbirsk government, an exactly parallel instance was recorded. Cholera attacked only that part of the village which drew its water supply from the river Kshi, while among the inhabitants of the village whose drinking water was derived from wells, there was but a single case—that of a beggar woman to whom had been given some clothes from an infected house. In two villages in the Tambof government, in each of which a dual water supply existed, it was observed in like manner that cholera was confined to one portion of the inhabitants. In each instance it was found that this portion of the inhabitants drew its water supply from a pond contaminated through the washing of linen of cholera patients. The rest of the village, supplied with well water not so contaminated, did not furnish a single case of cholera. The part played by water in the diffusion of cholera was clearly illustrated at the beginning of the epidemic in St. Petersburg. It was found that the earliest cases were confined to the workmen in the large factories situated on the banks of that branch of the Neva known as the Great Nevka. The workmen were accustomed to drink water derived directly, without filtration or boiling, from this branch of the river—water which at all times is charged with much organic matter (14 parts in 100,000), and which produces gastro-intestinal catarrh in all persons unaccustomed to its use. It was at once arranged that water should be supplied to the workmen from the town waterworks, and that this water should be filtered or boiled before drinking. The effect of the change in the water supply was immediate, and there was no further spread of cholera in that part of the city. Another instructive case was furnished by one of the St. Petersburg prisons. A prisoner who had been in solitary confinement for more than a month was suddenly seized with all the symptoms of cholera. Bacteriological d *post-mortem* evidence confirmed the diagnosis. All prisoners were supplied with boiled water, and a time the source of infection remained an nigma, which was only solved by the discovery that the deceased had drunk a quantity of unboiled water, provided to him for washing purposes. Steps were immediately taken to furnish all the other prisoners with boiled water for whatever purpose required."

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[16] Lancet, May, 1893, p. 1,055.

In an interesting report by the United States consul at Tashkent, in Turkestan, dated October 11, 1892, I also find the following interesting statements:

"That the cholera germs were taken into the system through drinking impure water my experience and personal observation confirm. At Samarcand three regiments of infantry were encamped side by side on a level plain close beside a stream of water. The colonel of one of these regiments took the most extraordinary pains to prevent his men from being attacked with the cholera and he succeeded. In the first place he caused every article in the camp to be thoroughly cleansed with hot water and disinfected. He compelled his men to bathe every day in water that had been boiled, and a guard was constantly maintained whose duty it was to keep the soldiers from drinking the river water, and to carry out the colonel's instructions. The result was that not a single case of cholera occurred in the regiment, while the other two regiments which were camped alongside lost over 100 men from cholera. In these latter regiments the ordinary precautions were taken, but no such measures were adopted as I have mentioned above.

"At Ashabad the cholera had almost disappeared early in August, and the event was celebrated with much rejoicing on the Emperor's name day, which occurs in that month. The governor-general gave a dinner to which he invited a numerous company, and to the various regiments were granted extra rations that they might rejoice on the occasion. The day which began so auspiciously amidst general rejoicing was destined to have an ending which has no parallel in history. Of the numerous guests who attended that dinner, one-half died within 24 hours. A military band of about 50 men, who played during that fatal dinner, lost 40 of their number with cholera and only 10 of the men reached camp that night. One regiment lost half its men and 9 officers ere the sun rose the following morning, and within 48 hours 1,300 people died of cholera. The cause of this outbreak was clearly traced to a small stream of water which supplied the town. Four days previously the authorities were informed that cholera had broken out at a small Turcoman village, situated on the banks of this stream, about 4 miles from Ashabad. The inhabitants of this village were ordered to move their kilrtkas (tents) several miles back on the hills, which they did. On the day previous to the reappearance of the cholera at Ashabad, a very heavy rainstorm occurred, which washed the banks of the river, and swept refuse and other matter from the abandoned village into the stream, and this matter was carried by the water into the city and distributed to all parts of the town by the numerous open canals through which the inhabitants were supplied with water. It was this contaminated water which caused the reappearance of the epidemic, and the frightful mortality which followed. The population of Ashabad was not more than 13,000, of which 10 per cent. died within 48 hours."

### (G) CHOLERA AT HAMBURG IN 1892.

The secrecy and prevarication attempted last year at Hamburg, when cholera appeared in that city, are much to be regretted. Great risk was thereby incurred in other seaports where, had the presence of the disease in Hamburg been known, the exercise of a little extra vigilance, but without the imposition of quarantine, would have probably secured the detection before landing of any suspicious cases from the north German town. Although August 21 was the first day on which the presence of cholera in Hamburg was officially admitted, there is no doubt that cases had occurred there quite a week before that date. The public announcement that on the first day as many as 83 cases and 22 deaths had occurred naturally caused a feeling of much anxiety throughout Europe and America, for in times past Hamburg has been a very frequent distributor of the disease. How the infection was first introduced last year into Hamburg is still a matter of dispute, but there can be little disagreement with the opinion that when once it was started the public water supply was the vehicle of its dissemination.

The strongest and most striking evidence of this is afforded by the relative incidence of the disease on Hamburg, Altona and Wandsbeck, which together make up the Greater Hamburg. Wandsbeck, with a population of 20,571, had 64 cases (3.1 per mille), and 43 deaths (2.0 per mille; Altona, with 173,279 inhabitants, had 572 cases (0.9), with 329 deaths (2.3); Hamburg State, with a population of 622,530, had 17,974 cases (28.8) and 7,611 deaths (12.2); or, taking only the infected parts, the town and suburbs of Hamburg, among 579,907 inhabitants there were 17,891 cases (30.8) and 7,582 deaths (13). This striking difference between Wandsbeck, Altona and Hamburg is distinctly traceable to the water supply. Thus Wandsbeck, which suffered less than the other two, is supplied with spring water, whereas Altona and Hamburg derive their water from the Elbe. Altona, however, gets its water very far down, at Blankensee, where the river is cleaner than in Hamburg, and passes it through a good gravel filter, unlike Hamburg, which gets its water from the harbor contaminated with sewage and absolutely unfiltered. These facts led Dr. Hueppe,[17] who spent the whole of last September in Hamburg, as well as most other observers, to the inevitable conclusion that the water of the harbor and the waterworks was answerable for the outbreak and rapid spread of the epidemic.

On behalf of the *British Medical Journal*, the history of the water supply of Hamburg has been investigated by a special commissioner on the spot, and its history has been examined from a series of official and other publications.[18]

### HISTORY OF THE PRESENT SYSTEM.

According to the official volume, "Hamburg and its Buildings," published by the Hamburg Architects' and Engineers' Association in 1891, the oldest system of water supply, which was established in the fourteenth, sixteenth and seventeenth centuries, was replaced in 1822 and 1843 by new systems, where steam power was first used. They were only in force in part of the town, but are not entirely out of use in certain districts at the present time.

After the great fire in 1842, W. Lindley undertook the water supply of the entire town, after Mylne's system, then in force in London; by 1849 the new supply was in full working order. In July, 1890, the sand filtration system of the water pumped from the Elbe was established at the central depôt of the waterworks at the expense of 7,000,000 marks, and it now supplies districts including a population of nearly 800,000 souls. There are 64 fountains in Hamburg city, 39 being for drinking purposes; but of course the ornamental fountains and "market fountains," so familiar in Germany for public laundry work, play out water accessible for persons who may be more thirsty than prudent and more thrifty than foreseeing. There remains the supply to private and public houses and offices. The Altona waterworks at Blankensee supply a population of 140,000; they were originally built after Hawksley of London's plan, in 1857, and nearly half of the present buildings remain as he projected them, but improvements were made on a large scale in 1873–5 and 1884–8. Extensive sand filtering beds were then constructed. It was on the recommendation of Herr Henry Gill, director of the Berlin waterworks, and Augustus Fölsch, that sand filtration was introduced at Hamburg.

### THE NEW SYSTEM.

Herr Arnold Samuelson, engineer to the Hamburg works, has published a treatise on the establishment and working of the new system in his city. The later treatises, pamphlets and articles on this filtration, published this year are, as might be expected, less congratulatory than those issued at an earlier date. Herr Samuelson implies that the results are not satisfactory, while in a work on the lighting, drainage and water supply of Hamburg published in 1887 it is stated, at the conclusion of the paragraphs on the drainage and sand filtration, that the Elbe water purified by this system is remarkably good, especially pleasant and wholesome to drink, and at the same time well suited for ablution and laundry work, owing to the small quantity of calcium salts which it contains. The system is doubtless good, the filter beds have been excavated and paved with care. But not only may the water be polluted between the filter beds and the public fountains and private cisterns, as evidently occurs; not only do a large waterside population drink water direct from the Elbe, but there remains the fact which long descriptions of new designs of filter beds must not make us forget; a considerable district is yet supplied by a system seventy years old. Evidence is also not wanting that the water fresh from the filter beds is not free from germs; indeed, it appears to be infested with them.

### THE ELBE WATER AND SAND FILTRATION.

This turns our attention to another fact—that the supply of water is from the Elbe. It is quite possible to filter away solid bodies and to precipitate noxious inorganic chemical salts, but organic germs can not be removed by retaining millions of cubic feet of water from one of the great muddy continental rivers in extensive open filtering beds. A few pints of water are easily purified, perhaps without boiling, in the wards of a hospital, but none would willingly rely on sand filtration alone for purifying water from a river which has run for hundreds of miles through hundreds of towns and villages. At least such filtration would never be trusted had an epidemic once broken out in the neighborhood of a hospital. When it comes to the purity of the water supplying a great city, the insufficiency of sand filtration of river water is thus rendered self evident.

Among the rules issued for the public benefit by the Imperial sanitary board we find clauses relating not only to ditch water, river water and water from the basins of town pumps and fountains, but also to "suspicious water" from any source. The citizen is warned not to drink any water that may in his own opinion be suspicious, and he is also reminded that small house filters are untrustworthy, not being perfect purifiers of water which may be impure when put into the filter—the Hamburg water being no doubt borne in mind when this caution was framed—besides being specially dangerous when not kept perfectly clean by frequent changing.

### THE PAST OF THE WATER.

Judging from official and medical works on Hamburg, that city has suffered very severely in the fourteen epidemics of cholera which, beginning in 1831, have hitherto visited that city until the last appearance of the disease in 1873. In all these publications the water is blamed; but it is the Elbe water fresh from the river that is meant even when not specified. In all the visitations the waterside poor were first attacked, and this truth, confirmed by statistics, is only what might have been expected.

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[17] Berlin. klin. Woch., Nos. 4 and 5, 1893.

[18] British Medical Journal, September 22, 1892, p. 708.

3,147 feet, but it proved to be brine. Hence minute precautions must be taken else all the engineer's labor may be in vain. Boring too many wells close together prevents the water from rising to the surface, so that pumps have to be used. To cry out for artesian wells at once is like demanding the instant building and equipment of ironclads when the foe is near the coast. The boring of the wells is a necessary prophylactic duty which the authorities must deliberately, but not hurriedly undertake. As for shallow wells, digging for them is out of the question, as they are never to be tolerated in a porous soil—as at Hamburg—on which houses are built. The best bricking in of the sides can not protect them from impurities entering from above and below.

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### WATERBORNE CHOLERA IN INDIA.

India is very generally referred to as the "home of cholera." The disease is there established endemically throughout a wide area, but not, as most Indian authorities once believed and many would even now apparently often have us believe, in virtue of any local, mysterious, unknown or unpreventable causes. It is so in virtue of conditions which may all of them be removed and which in time I trust will be removed. In 1879 there were 318,000 deaths from cholera in India; in 1881 there were 161,000 deaths; in 1887 488,000; and in 1888, 270,000. It must also be admitted that nearly all the great cholera epidemics can readily be traced back to India along lines of human intercourse. But what to my mind is entirely contrary to all we know of cholera, and is, from a practical common sense point of view, much to be deprecated, is the tendency in many quarters to regard the idea of eradicating cholera from India as impossible and ridiculous. I have waded through and studied, I think, all the reports and available information respecting India during the last thirty years, and have had the benefit of much personal converse on the subject with medical men who have spent years of their life in the "endemic area" of India, and in the result, it seems to me as fatuous to deny the possibility of ridding that "endemic area" of cholera, as to deny the possibility of banishing typhoid fever from unwholesome localities in this country. I do not question the herculean nature of the task. The religious rites and superstitions prevailing in India, the ignorance and fanaticism of the natives, the enormous expenditure requisite may all combine to render the difficulties of the task well nigh insurmountable in present circumstances. But let it be rationally realized that an endemic area of cholera in India is a removable blot, and let those who are responsible for the government of India set to work to remove the food on which cholera grows, and in time to starve the scourge out of India. For my own part I am convinced that in India as elsewhere, water has been the chief nurse and disseminator of cholera, and that if every town and village in India were provided with pure and properly protected water the so-called endemic area would soon become indefinite, and would eventually disappear from the map. Why there should have been so much opposition to this contention, such needless straining to prove it groundless or to shake its foundation I am somewhat at a loss to understand. It is a fact that cholera, to all intents and purposes, fled from Madras and numerous other places immediately on the introduction of uncontaminated and properly protected water. Why should not the experiment which when tried has always been found successful, have been extended or, at least, further tested in new localities? Happily, with the support of such eminent and practical Indian sanitarians as Drs. Macnamara, Townsend, De Renzy, Cornish, Payne, Simpson, Furnell and Laurie the contention that water is a frequent and common means of cholera diffusion in India is gaining ground, and must ere long bear good fruit.

Dr. M. C. Furnell, in his recent excellent book on the subject expresses himself as firmly of opinion that the general method of the propagation of cholera in India is by means of specifically polluted water. While in Europe, however, nearly every outbreak of cholera has been definitely traced to the contamina-

But an elaborate work on Hamburg, its natural history and medical aspect, lays all the blame on unfiltered Elbe water and those who drink it; and this work appeared in 1876—that is to say, three years after the last epidemic. The explanation therein given as to the way in which the disease spreads to the wealthy, and to parts of Hamburg far from the Elbe and Alster, is clearly a hypothesis on which the authorities have been lulled into a false security.

The epidemic of 1892 shows that something has been overlooked. The first to suffer, says the work above quoted, are the sailors and poor close to the Elbe; then, when a large number of them are dead or ill, the infection is carried from man to man into other parts of the town. Thus direct contagion is made to account entirely for the spread of the disease. There is not a suggestion that the waters from the filters might be incompletely purified, although it is clear from close examination that in 1876, as now, the apparatus for filtration was not adequate, was not placed at the general disposal of the town, and besides did not promise such adequate filtration from organic impurity as its projectors professed it could give.

### TRIBUTARY STREAMS AND LOCAL SUPPLIES.

Besides the "water supply" of the city, in the official sense of the term, we may consider the total supply of water procurable in any way, whether from nature direct or from local sources. Dr. Wibel wrote an exhaustive monograph on the river and surface water of Hamburg in 1876. The three rivers in the immediate vicinity of the city are the Elbe, Bille and Alster. The analysis of water taken from the middle of the Elbe showed that Elbe water was not different in composition from that of any other river similar in its source, length and course. The tourist who has visited the beautiful district near Dresden known as the Saxon Switzerland, is aware that the Elbe, as it flows by Schandau and Pirna, far from the great city near its mouth, is already a very dirty river; and even at Leitmeritz in Bohemia, the narrow rapid "Elbestrom" is as muddy as the Mississippi. Nobody would care to drink it there. At Hamburg it is of course much worse. The Bille is a small stream which flows from the woods where once our Saxon ancestors dwelt. Dr. Wibel shows that in the suburbs of Hamburg it is fairly pure. But near its entry into the Elbe within the city, it is thoroughly polluted, and full of all sorts of organic substances. The Alster arises in Holstein, and enters the Elbe after dilating, on account of artificial impediments, into the famous "outer and inner Alster," which are among the "lions" of Hamburg, and give a characteristic appearance to the city. The analytical tables show that the Alster is not nearly so polluted as the other rivers; probably its two great ponds, used for boating and skating, are not so near low quarters and housewives with pails and dustbin produce as are the Elbe and Bille. Unfortunately, there flows into the outer Alster a stream of notorious ill fame, the Eilbeck, which neutralizes much of the advantage that the Alster may gain from the kind of protection above referred to. The Eilbeck flows through the town of Wandsbeck in Holstein, and before opening into the Alster it spreads out as a pond known as the Kuhmühlenteich. The Eilbeck was tried and found guilty in 1874 of having caused an epidemic of typhoid in a district through which it flows.

### CANALIZATION AND POLLUTION.—SURFACE WELLS AND PUMPS—POSSIBILITY OF ARTESIAN WELLS.

Hamburg once had the great advantage of a large number of running streams of pure drinkable water. Hence, no doubt, in past centuries, when the hygiene of the town was otherwise far worse than at present, the citizens escaped dangers to which their living descendants are now exposed. The extensive canalization of Hamburg has entirely destroyed many of these streams. Only four remain, and three are thoroughly polluted, running through dirty slums; one of them receives the drainage of the main cemetery. The fourth, the "Englischer Brunner," is less noxious. This pollution of bright streams is a sad affair and their restitution to their pristine purity a theme worthy of the consideration of sanitarians. Dr. Wibel notes that the ease with which water can be obtained from the waterworks supply has caused the good old fashion of drawing water from these streams outside the town to die out. Our surprise about the prevalence of cholera will be much allayed when we find that Dr. Wibel analyzed the brook water from certain pumps close to the streams. Out of the pumps much evil must be drawn. The pumps properly so-called, drawing surface water and not water from the rivers or streams, are next considered. Their water is condemned and yet some of them are specially used for table purposes, A few surface water ponds with drains exist in the neighborhood of the city; of course, they are polluted. Lastly, Dr. Wibel describes his researches respecting the artesian wells of which it appears, there are ten at the disposal of the city. The water is fairly pure, but as it flows in different wells through different strata it varies greatly in chemical composition; in some cases it is highly charged with soluble inorganic salts. It is not satisfactory to find that Dr. Wibel does not consider that it is an easy matter to discover fresh artesian wells. There is no known indication for calculating where they can be pierced so as to reach water at a safe depth without great cost and difficulty.

### ARTESIAN WELLS AND SAND FILTERS.

The mention of artesian wells in relation to Hamburg renders it necessary that all who take a real interest in the restitution of that city to a sanitary condition should remember precisely what an artesian well is, and how it is made. It is a spring of water rising above the surface of the ground by natural hydrostatic pressure as the result of the boring of a small hole down through a series of strata to a water carrying bed enclosed between two impervious layers. In the first place, the difficulty of boring a small hole through a great depth of strata varying in density is considerable, and the expense high. The boring is always more or less experimental; the precise position of subterranean water is not always to be determined. Sometimes the boring need be but about 300 feet, as in many English wells; at others 3,000 or even 4,000 feet are exceeded. Then the boring may strike water lying between two impermeable strata; but there may be a flaw in one of the strata, or the lower may be damaged by boring too far. In both cases the water will not rise, as it escapes through the flaw or sinks below the lower impermeable stratum running through the boring into porous soil beneath. In boring a well at St. Louis, Mo., in 1868, water was found at the depth of

3,147 feet, but it proved to be brine. Hence minute precautions must be taken else all the engineer's labor may be in vain. Boring too many wells close together prevents the water from rising to the surface, so that pumps have to be used. To cry out for artesian wells at once is like demanding the instant building and equipment of ironclads when the foe is near the coast. The boring of the wells is a necessary prophylactic duty which the authorities must deliberately, but not hurriedly undertake. As for shallow wells, digging for them is out of the question, as they are never to be tolerated in a porous soil—as at Hamburg—on which houses are built. The best bricking in of the sides can not protect them from impurities entering from above and below.

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Dr. M. C. Furnell, in his recent excellent book on the subject expresses himself as firmly of opinion that the general method of the propagation of cholera in India is by means of specifically polluted water. While in Europe, however, nearly every outbreak of cholera has been definitely traced to the contamination of the water supply, and much has been written about it, telluric and atmospheric conditions are distantly invoked by Indian authorities. These are terms of mystery and of indefinite meaning, which unfortunately have been adopted, however, by too many government officials, who can not explain what they mean, and frequently use them as a cloak for ignorance. Dr. Furnell has had no difficulty in finding masses of facts in support of his opinions. The habits of the natives, though in direct opposition to their own laws and sacred writings, are such as tend to the most filthy pollution of the water supplied for their use. Where pure water has been supplied to to the natives, as in Madras and Calcutta, and care has been taken to guard such sources of supply from pollution, cholera epidemics have become of infrequent occurrence and of greatly reduced fatality. In this opinion all the best authorities concur.

I will refer to the two great cities which are leading seats of government and most under our influence. In the paper by Dr. W. J. Simpson, medical officer of health, read at the British Medical Association in August, 1888, he gave a description of Calcutta, Howrah and the suburbs, dwelling especially on the water supply, the tanks, the drainage, the construction of the streets and houses, native and European; and the sanitary system generally. Calcutta, to the south of the native town, he stated is well built; the streets are wide and straight, the houses are large and have gardens attached; there is a liberal supply of excellent water, the drainage and cleansing are good, and that portion of the city compares favorably with the better parts of London. With a few exceptions, northern and native Calcutta is densely crowded, the streets are narrow and irregular, the drainage is bad, only the better and middle class have a fair supply of water; the poorer class have a very scanty water supply, and depend upon the water in the tanks. The native town is studded with wells and tanks. Neither Howrah with its 100,000 inhabitants, nor the suburbs of Calcutta with its 250,000 have any public water supply, with the exception of the wells and tanks. The insanitary condition of Howrah without a public water supply, and without building regulations is surpassed by the suburbs, which have no public water supply, no drainage, no building regulations, nor any effective conservancy arrangements. As a general rule, European residents in Howrah get their water from Calcutta by carriers, and they avoid the well and tank water. The personal habits of the natives are cleanly. As a religious duty they bathe at least once a day, the women more frequently, and this is done when convenient, in the river Hooghly, but generally in the tanks near their houses or huts. The tanks are thus defiled by the excretions of the body, by the washing of dirty clothes, frequently of clothes soiled by excretions of the sick, by human ordure due to the practice of children and others defecating on the banks of the tanks, and by the drainage and soakage from the surrounding huts and houses. Thus the water in the tanks except during the rainy season, varies in quality from moderately polluted up to concentrated sewage, and this is the only water supply practically available for large numbers of the native population. Dr. Simpson traces out the connection between local outbreaks of cholera and a deficient and contaminated water supply, showing that those who have an abundant and pure water supply—namely, the European and better class of natives—escape cholera epidemics, except in isolated instances, which can generally be accounted for; while the natives who necessarily depend on the tank water, suffer severely when the tank becomes polluted by the excreta from a cholera patient. He says:

"I would particularly direct attention to this scarcity of water in the parts affected. Go almost where one may, in the northern part of the town, and especially in the riparian wards, there is the same complaint of the want of water, and a very valid one it is. It is a common occurrence to see the people grouped round one of the standposts, waiting their turn to fill their chatties, many of them to be disappointed, for the water from the standposts often comes in mere driblets, and the supply is exhausted or turned off before half the people are supplied. Scarcity of water brings in its train a great deal of sickness apart from cholera. The districts which have suffered most from scarcity of water have suffered also from a large amount of sickness of a dysenteric character."

The natives bathe, wash their utensils and clothes in the tanks, because it is the only available place for doing so; and they use the water of the tanks, contaminated in addition by soakage and sewage for cooking and drinking, because it is the only available water supply for domestic purposes. The remedies for the condition of affairs described are simple enough but they need time, and must involve considerable expense. The first requisite is a liberal water supply for Howrah and the suburbs, and a more liberal supply for Calcutta. Few will drink polluted water if they can obtain pure water. By specially constructed tanks even the habits of the people can be so directed as to permit them to enjoy the luxury of the bath, and to perform their ablutions without danger. The second requisite is well-planned streets with free ventilation, good building arrangements, a system of drainage to pass through these streets, systematic clearing, leveling, paving and filling up ponds, draining, scavenging, removal of nuisance, and a well-organized sanitary department. The carrying out of these measures will ultimately convert Calcutta, Howrah and the suburbs containing nearly 800,000 inhabitants, into as healthy a locality as any in the world, in so far as the prevalence of diseases not due directly to a subtropical climate is concerned, and these measures of sanitation will change one of the most important centers in the endemic area of cholera into an area no longer marked by endemicity. Before any real progress in scientific medicine can be expected in India, the scientific branch of the medical service must be distinct from the administration, for when administrative functions preponderate, scientific research is relegated to such a subordinate position as to render it impossible to be carried out satisfactorily. A central institute is necessary, well-equipped, and having attached to it a body of men well trained in chemical, physiological, and biological methods, whose whole time should be devoted to scientific research.

I take another example from Dr. Furnell, the surgeon-general at Madras, writing in 1886 an address on cholera. For many years before the introduction of the Red Hills water supply into Madras, the number of deaths from cholera annually amounted to hundreds, and too frequently to thousands; but from the year 1872, when the water supply was first opened, there has been a very large reduction in the mortality, one year being absolutely free from the disease, and in three others, the deaths being 5, 6 and 2 respectively. Of course during the famine years there was a large increase in the fatal cases of cholera, caused by the migration into the town of many poor, half-starved creatures who had no strength left to resist the disease. But as soon as the famine was over the rate of mortality again fell to below 100 per annum; and during the last four years when there has been a severe epidemic of the disease throughout the greater part of the Madras presidency, the average number of deaths had not exceeded 250 per annum. The greater part of these deaths also, it is shown, took place in those parts of the town which had not had the benefit of the Red Hills water supply. Dr. Furnell, therefore, urges the necessity of extending the water supply to these localities. Our duty, then, lies before us; it is a grave and difficult task, but must be looked steadily in the face.

From Dr. Furnell, also, I gather that Pondicherry has a similar immunity from cholera, even while the disease is raging in the neighboring English towns of Cuddalore, Chellumbrum, etc. Pondicherry town is supplied with water by artesian wells and also from a small lake situated some distance outside the town, from whence the water is led by pipes and distributed throughout the town. It is impossible to contaminate the source of the artesian wells, and great care is taken that the other source is also protected. To this unique water supply Dr. Furnell has attributed the immunity of Pondicherry from cholera. "If it is argued," he says, "that it is more likely owing to its general cleanliness and conservancy, I answer that while all must admit Pondicherry is a clean town (in that respect an example), still I can not admit that it is so much cleaner than the neighboring town of Cuddalore, where cholera flourished with much vigor; nor can I admit the difference is owing to telluric, atmosphere or local influences, for to tell the truth these terms convey no very definite ideas to my mind, and seem rather a convenient escape from ignorance than from any scientific explanation. But why, one may ask, should a certain spot in a contaminated district thus suddenly be exempt from these mysterious influences? Its unique water supply, free from contamination, seems to me a much more commonsense explanation of the matter."

Here is another instance quoted by Dr. Furnell of the protection afforded to a community by a pure and uncontaminated water supply. It is Dr. Van Geyzel of Ganjam, who thus describes it: "The port of Gopaulpore (Ganjam district) has enjoyed a remarkable immunity from epidemic cholera under circumstances which are sometimes considered very favorable to the spread of the disease. Cholera has this year (1885) raged all over the district, from Rumbha to Chicacole, and from east to west; the villages in the neighborhood of Gopaulpore furnished not a small proportion of cases. When it is remembered that from these very villages hundreds of coolies go daily to Gopaulpore for work, and back again; that a stream of carts, about 150 on an average, keeps daily pouring into Gopaulpore from various parts of the district and out again, it goes without saying that Gopaulpore is by no means isolated in any way, but on the contrary, it has as frequent and large a communication with the interior parts of the district as Aska or Rumbha, or even Berhampore, in all of which places it may be said that cholera is very seldom absent. During this year only three cases of cholera occurred in Gopaulpore. These cases arrived already suffering from the disease. In this way the disease has occurred, now and again, chiefly among people coming from other places, but it has not gained a foothold. The general sanitary condition of Gopaulpore, though much improved of late, is by no means what is to be desired. There is, however, one circumstance which makes Gopaulpore unique in respect of its water supply; it has absolutely no tanks whatever. There are thirty-five wells in the village for a population of 2,675 people, good, bad and indifferent. Lately some wells have been sunk by Mr. Minchin, who generously allows people to take drinking water from them, and they are freely resorted to. The immunity of Gopaulpore from epidemics of cholera while it was surrounded by infected villages with which abundant daily communication took place, as well as with other and more remote parts of the district, especially at a time when cholera was raging epidemically generally over the whole district, and the inability of the disease to establish itself, although it was imported on many occasions, point to the want of something by which the disease could be propagated and spread. In this connection the absolute absence of tanks is well worthy of note."

A further example of the influence of the water supply upon cholera in India is furnished by the 85,000 inhabitants of the city of Nagpur, the capital or chief city of the Central provinces. In 1872 that city was supplied from the "Ambaghiri reservoir." In the seven years previous to the opening of this water supply there were 1,264 deaths from cholera, while in the next seven years after that date Nagpur had only 177 deaths from that disease. It has been further remarked in Nagpur that after the opening of the water supply the cholera was limited almost exclusively to that part of the city in which impure water was still used, such as that of surface streams and open tanks.

The following interesting account of a cholera epidemic in the Salem district, in 1881, is extracted from the annual report of the sanitary commissioner of Madras for that year. It appears that by far the greater number of deaths occurred among people using the river water which is described as defiled by the filth from drains, the filth from dirty clothes, and the filth from men's bodies. It appears also that more than five-sevenths of the whole number attacked occurred among caste Hindus, people who obstinately cling to the use of this river water from religious belief. The Mussulman population almost escaped; the European and East Indian entirely; and strangest of all, the inhabitants of Kitchipoliem, Chucklers, low caste people who are engaged in most filthy occupations, and who are not allowed to use the river water, also enjoyed an immunity from this dread scourge. The course of the disease is shown to have been mainly along the banks of the river, and the village of Kitchipoliem, mentioned as having enjoyed an immunity from the disease, is situated well away from the river. That the use of the river water alone is not to be justly saddled as the cause of the disease, is evidenced by the statement that the division of the town in which the inhabitants used well water instead of that of the river suffered as severely from cholera as most of the other parts of the town along the river banks. Apart from all this it is added: "The curious feature of the epidemic is its weighty incidence on children, nearly one-half of those attacked being children under 15 years of age, and fully one-half of the deaths occurring among them."

Again, in the Punjab sanitary report for 1869 Surgeon Major A. C. De Renzy called attention to the remarkable fact that the Fort of Peshawar had passed almost unscathed from the terrible epidemics which had visited that station, and that this immunity was the more remarkable because the fort was extremely unhealthy. Dr. De Renzy attributed the circumstance to the fact that the fort was supplied with water from a well which, though an extremely bad one, was more safe from choleraic contamination than the roadside gutter water so generally used in the cantonment. On visiting Peshawar in company with Dr. Cuningham a few years later Dr. De Renzy was surprised to find that the European troops in the fort had suffered with special severity and for a time he doubted the correctness of his own explanation. But casually and after some days the novelty of an epidemic in the fort became less inexplicable. It appeared that about a week before the appearance of cholera at Peshawar the medical officer of the fort seeing how bad was the fort water and how much the troops were suffering from fever, and not knowing anything of what Dr. De Renzy had written about the immunity of the fort from cholera, had recommended the supply of cantonment water, and this water was accordingly sent in casks, the distance being about two miles. The water was supposed to be taken, as ordered, from a certain good well, but it ems that in one case at least, the water carriers, to ve themselves the trouble of lifting water by eans of ropes and pulley blocks from a depth of 90 eet, had filled their vessels from the roadside gutters. Whether they did so or not in the case under consideration is unknown, but the fact remains that in 1872 for the first time in the history of the fort, the European troops were supplied with cantonment water, and that this was also the first occasion of their being affected with cholera. The native portion of the garrison continued to use the well water as formerly and enjoyed their former immunity from the disease.

Religious pilgrimages are a fruitful means of spreading cholera in the east. In 1866, 30,000 pilgrims died of cholera at Mecca. And here let me mention one of the customs of that pilgrimage which goes far to explain the intensity and the fearful mortality which attend any outbreak of cholera among the Meccan pilgrims. At a given period the pilgrims stand naked in turn by the holy well; a bucket of water is poured over each man; he drinks what he can of it, and the rest falls back into the well. The water of this well has been analyzed by an English chemist, Dr. Frankland; it is fearfully polluted with abominable contaminations. In 1866, within a few days of the ceremony, the road for twelve miles to the foot of Mount Ararat was thickly strewn with dead bodies.

In a report in June, 1891, Dr. W. J. Simpson, an able and energetic health officer of Calcutta, gave an interesting account of two large pilgrimages which he personally witnessed in that year—one in the endemic area of Bengal and the other in the non-endemic area or north part of India. The first of these pilgrimages was the Ardhodoya Jog, which is held at Calcutta and other sacred places near Calcutta, at rare intervals of 27 or 28 years. The purity to be obtained by bathing in the Ganges during this festival is exceptionally great, and therefore the gathering of pilgrims at the several bathing shrines was, on its own merits, a very large one. Kalighat, where the gathering in question took place, is in the suburban area of Calcutta, on Tolly's Nulla, a small tidal creek which is held to be more sacred than the Hooghly. The Nulla can be waded across at low tide, but it is the receptacle of unspeakable filth of all kinds. After describing the insanitary arrangements of the neighborhood, Dr. Simpson remarks that "without a good water supply, or drainage, or proper means of disposal of the excreta and sulliage, with crowding together of huts and houses irregularly placed, and with the filthy tidal Nulla, which is practically the sewer of the district, and with numerous polluted tanks, Kalighat, it may be surmised, is at no time a healthy spot, and at all times a danger to pilgrims." On the occasion in question at least 150,000 people came into Calcutta in the first and second week of February, and to describe the crowding which occurred in the Nulla on the festival day is difficult. Dr. Simpson performs this task very graphically by appending to his report a photograph which he himself took on the morning of February 8. The crush is seen to be very great, and it is marvelous that no accidents happened; the tide is low, and the bathers, even in mid stream, have not the water much above their knees. A collection of boats, extending as far as one can see, is so great and close together that only occasional glimpses of the water are to be obtained, and these boats are crowded with men, women and children. Dr. Simpson gives details of an outbreak of cholera which occurred among these people, as many as 51 cases appearing on February 11. The pilgrims had to be soon dispersed, and though this dispersal checked a larger outbreak at Kalighat which would have only widened its circle afterwards, it could not prevent those already infected from suffering on their way home. Consequently, at some of the principal railway stations sick people had to be taken out of the trains; passengers by boat died on their voyage, their bodies being thrown overboard; while travelers on foot were picked up dying and dead on the roads.

Dr. Simpson's description of the great Kumb festival, which occurs once in twelve years at Hurdwar, is also very graphic, and photographs taken by Dr. Simpson at the festival of 1891—copies of which I have before me—show the sacred pools and the approaches to them to be hidden by a mass of semi-naked human beings. The pollutions to which the sacred pool is exposed on these occasions are indescribable. There is not only the washing of the naked fakirs who cover themselves with wood ashes as their only clothing, and the general bathing of the pilgrims, who are not all in the cleanest of clothes —several, moreover, on the occasion in question being seen bathing with skin diseases upon them—but the ashes of deceased relatives, enclosed in little red bags, are brought from the different homes of the pilgrims and thrown into the pool. Can it be wondered at that, when cholera cases have been among the pilgrims, disease and death should have spread broadcast?

Reverting again to the sanitary administrations of India and the difficulties to be encountered, I fully recognize that very much has been done in the way of sanitary reform under English rule. This was shown by Surgeon General Sir W. Moore, in an interesting paper read by him before the International Congress of Hygiene, which met in London in 1891; but at the same congress the authors of numerous other papers showed the amount of sanitary work still urgently waiting to be done in India. One and all of those authors placed the need for better water as the most pressing want throughout India, especially in the villages, which contain 95 per cent. of the people of India.

Greater energy and more systematic administration are much needed in regard to the sanitation of India, and England's imperial responsibilities in this matter are very heavy, not only to the native races under her protection, but to civilization at large. At the International Hygienic Congress in Vienna, the remark was constantly made, "You English have by your sanitary improvements prevented cholera from gaining a foothold in England; why do you not attack it in its birthplace, and prevent it from springing into life in India?" And the same question has more recently been asked by Dr. Talafuss of Tiflis, and by M. Monod, the director of the public health department of the French Ministry of the interior, in his work on Cholera in Finistère. We may well closely question ourselves why we have not succeeded in carrying further than we have done the great work of improving the sanitary circumstances of Indian populations. It has not been, as Sir Douglas Galton has pointed out, for want of knowledge. The following scheme for a new public health service for India has been drawn up by an eminent medical officer in India, who has himself long been engaged in sanitary work and organization. I commend it as a useful suggestion to our Indian government:

1. An imperial sanitary department attached to the government of India.
2. A provincial sanitary department attached to each of the provincial governments, such as Bengal, N. W. Provinces, Punjab, Madras, Bombay, Central Provinces, etc.
3. A local sanitary department attached to each municipality, district board, etc.

1. The imperial sanitary department should be administrative and scientific, and quite distinct from the sanitary department of the army. It should consist of: 1, the sanitary commissioner with the government of India; 2, deputy sanitary commissioner; 3, a medical statist; 4, veterinary commissioner; 5, sanitary engineer; 6, a minister of health, having a seat in viceroy's council as president. Scientific agents: Laboratory with trained experts. Duties: The advising of the viceroy and council on important health matters, either initiated by the imperial sanitary department or referred to it by the local governments; the collection and publication of information as to epidemic disease existing in India and in other countries; the right of asking from provincial governments what they propose to do or have done in checking or inquiring into diseases affecting man, animals or agriculture in their provinces; the arranging that all administration reports shall be drawn up on a uniform plan for ready reference; the acquiring of all information regarding the movements of pilgrims, coolies and emigrants, and the advising the provincial government, and requiring the latter to take proper precautions; the consideration of new sanitary laws, etc.

2. Provincial department, to consist of the following sanitary officers appointed by the local government: 1, sanitary commissioner; 2, assistant sanitary commissioner; 3, sanitary engineer; 4, a president, who should be a high officer in the civil service. Traveling agents: Deputy sanitary commissioners or inspectors, veterinary surgeons, deputy sanitary engineers, as may be required. Scientific agents: Trained professors and assistants in government laboratory for bacteriological, chemical, agricultural work, etc., and general sanitary investigations requiring to be done in laboratory. Duties: To control local authorities; to institute special investigations at any particular spot on any particular subject; to make by-laws and amend sanitary laws; to investigate diseases of men and animals, and study agricultural pests, etc.; to analyze waters, etc.

3. Local sanitary departments, to consist of municipal commissioners or district magistrates, with civil surgeon when obtainable. Executive agents: A health officer, attached for one or more towns; an engineer in similar position, and a sanitary staff for each place as required. Duties: Conservancy, water supply, building regulations, drainage, registration of births and deaths, vaccination, stamping out of infectious disease and informing provincial authority by weekly reports as to prevalence of cholera, small-pox or other dangerous disease.

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# ADDRESS ON STATE MEDICINE.

Delivered before the American Medical Association at the Forty-fourth annual meeting held at Milwaukee, June, 1893.

BY WALTER WYMAN, A.M., M.D.

SUPERVISING SURGEON-GENERAL OF UNITED STATES MARINE HOSPITAL SERVICE.

## THE EXTINCTION OF CONTAGIOUS DISEASES.

*Mr. President, Ladies and Gentlemen:*—Is the idea utopian or has the time come in the history of the world when it should be considered a rational thought, worthy of serious contemplation? When a standard so lofty as this should be raised, and around it gather physicians, sanitarians and philanthropists fully determined upon a great struggle and animated by a reasonable confidence in ultimate success?

Concerning the *great epidemic* diseases, encouragement may be found both by a reasoning from analogy, in the study of their respective histories, and in the contemplation of modern knowledge and methods.

The history of the world shows us that whole races of men and other animals have become extinct. Why should not races of microbes become extinct? And certain diseases that once ravished the earth in epidemic form have so lost their inherent strength or have been so controlled in the latter part of the nineteenth century as to warrant the belief that their histories are closed, or fast closing. The plague of Athens and the plague of the second century are unknown at the present time; and the terrible black death of the fourteenth century it is unreasonable to suppose can ever again sweep from the face of the earth 25,000,000 of its inhabitants within a century.

The terrible bubonic plague since the introduction of quarantine, crude though the first quarantines were, has gradually receded from Europe, its last appearance on European soil being in 1878 when the Russian government by means of military cordons and destruction of infected villages by fire succeeded in stamping it out. Though it still occurs in Asia it may never again obtain a serious foothold in Europe because of more perfect quarantine and improved sanitation.

With regard to yellow fever the *great* period of *its* history was from 1732 to 1805. Formerly it was of common occurrence in Europe, the ports of Spain in particular suffering severely between 1801 and 1825, but there has been no disastrous epidemic of this disease in Europe since that of Lisbon in 1857, thirty-six years ago.

Its earlier history in this country includes invasion not only of the South, but of parts as far north as Pennsylvania, New Jersey, New York and even New Hampshire. But to-day, though constant vigilance against its introduction is necessary, it has practically vanished from the ports of the United States.

Formerly epidemics of this disease were so frequent in the city of New Orleans that the belief became quite prevalent that it was natural to the soil, but under the excellent quarantine service, and the modern quarantine appliances of the Louisiana State Board of Health, there is now a record of fourteen years' exemption from this dreaded pestilence. The last epidemic in the United States was that in Florida in 1888, when, by reason of intelligent restraints, it was prevented from spreading to other States. Since that date an efficient State Board of Health for Florida has been established, and under its vigorous management the disease has been barred out. Even n the West Indies some ports formerly affected e now exempt and with careful sanitation and nitary engineering all might be freed, and this read disease become as certainly a matter of history only, as the African slave trade with which it was intimately associated. In South America, Rio Janeiro is its principal breeding place, but the disease was unknown there until 1849. Why should it not again become unknown?

Since the discovery of vaccination by Jenner in 1796 small-pox, though still a stubborn foe, no longer devastates without restraint. It is now simply a matter of choice whether one shall be made absolutely proof against this disease, and the good effects of a compulsory law regarding vaccination are seen in the statistics of Prussia, in which country for six years prior to the enforcement of vaccination the deaths from small-pox averaged 85 per 100,000 of the inhabitants, while from 1875 to 1886, after the law came into force, the yearly average was but 2 per 100,000.

Typhus fever flourishes to-day in certain parts of Mexico, and is occasionally reported from the old world. It is always a menace where large numbers of people are crowded together with unsanitary surroundings. But it has no permanent lodgment in the United States, and the energetic and successful measures instituted by the Board of Health of New York during the past winter to suppress this disease, although it appeared in a section of the city more densely populated than that of any other city in the world, is a striking example of what may be accomplished by proper law, energetic execution and scientific disinfection.

The Japanese have recently illustrated how a disease, commonly thought to be infectious, may be eliminated by scientific investigation and the application of a proper remedy. Prior to 1884, beriberi was the scourge of the Japanese navy. During a period of six years prior to 1884 there were 9,516 cases reported, while for a second period of six years, from 1884 to 1889 inclusive, there were but 765 cases, of which 718 occurred in 1884, which was the year in which the remedy, relating to a change in the character of the food furnished, was applied. In 1887 there was not a single case reported in the entire navy of 9,000 men; and the *New York Medical Record* aptly remarks that "this is one of the great victories of science, and lends good grounds to the hope that beriberi may before long become a rare or even unknown disease in the Mikado's dominions."

With regard to cholera, which is still an ever threatening menace, the history of the past few years has demonstrated most clearly its relation to filth and to contaminated food and water, both of which conditions require only the peculiar energy and love of cleanliness characteristic of the Anglo-Saxon race. In recent years the superior sanitation of England and the more perfect quarantine surveillance of the United States have served to protect these two nations from this exotic disease.

One possible agency in the elimination of these diseases, still young as a science but not without promise, is protective inoculation. Whatever opinion may be held of Freire's inoculations for yellow fever and Kitisato's and Haffkine's inoculations for cholera, the investigations of these and other bacteriologists in this particular field warrant the hope that results will be attained equal in efficiency to vaccination for variola. But be this as it may, the nature of these diseases is now so well known that they no longer strike terror in the hearts of those whose duty it is to meet and combat them, and never before has human agency had within its grasp the weapons known to be efficient in preventing their spread. The terra incognitus no longer exists, and we have but to provide ourselves with the weapons, and manifest the energy to wield them, to combat successfully these microbic armies hostile to human life. As to the *United States* the time is at hand when we may expect that no more shall cholera, typhus, yellow fever or small-pox prevail in epidemic form. Never before have our ports been provided, as now, with protective armaments; the ordnance, so to speak, of sanitary defense. The great power of steam has been invoked, and along the coast from Portland, Maine, to Port Townsend, Washington, where ten years ago not a single port was provided with a steam disinfecting chamber, there are now twenty-three ports with steam chambers in actual operation or in course of construction. These ports are: Portland, Boston, New York, Sandy Hook, Delaware Breakwater, Reedy Island in the Delaware River, Cape Charles, Baltimore, Wilmington, N. C., Savannah, Blackbeard Island, Ga., Charleston, Dry Tortugas, Key West, Mullet Keys, Pensacola, Mobile, Chandeleur Islands, New Orleans, Galveston, San Diego, San Francisco and Port Townsend; of these ten are national quarantine stations.

In *support* of the quarantine plants are *laws* both national and State, that are sufficient; but should perchance contagion pass this line, it meets with forces ready to prevent its spread. State boards of health have increased in number and in power. There are now thirty-seven, and at their recent conference in New York City, the reports revealed not only their zeal and activity, but an increase in the legal power and pecuniary resources of many, brought about by their own efforts within the past year. In States that have no board of health, or for other reasons fail to execute such regulations as are necessary to prevent the spread of epidemic disease into adjoining States, the government, in the interest of all, under the act of Congress of February 15, 1893, must undertake to enforce them.

### *QUARANTINE LAW AND REGULATION.*

It will be germane to the subject and may be of particular interest at this time, to give a resume of the measures which have been taken by the national government under the act referred to. This act, approved February 15, 1893, is entitled "An Act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service." Stripped of its legal verbiage it provides, first, that no vessel shall enter a port of the United States from a foreign port without a bill of health, signed by the United States consul, or a medical officer of the United States government; and provides a penalty of $5,000 to be imposed on any vessel coming into American waters without such bill of health. Furthermore, the vessel shall not be admitted to entry except in accordance with other provisions of the act, and with such regulations of State and municipal authorities as may be made consistently therewith; and before being permitted to enter or discharge its cargo or land its passengers a certificate must be obtained from the health officer at the quarantine station, certifying that the rules and regulations have in all respects been complied with, both on his part and on the part of said vessel and its master. This bill of health and the quarantine certificate are to be delivered to the collector of customs.

The secretary of the treasury is directed to make rules and regulations to be observed by vessels at ports of departure and on the voyage, and the president may detail a medical officer of the government to serve in the office of the consul at any foreign port for the purpose of making the necessary inspection of vessels, to see that the regulations are complied with, to sign the bills of health and to furnish information.

Consular officers are required to be notified by the secretary of the treasury of the regulations made with regard to vessels, cargoes, passengers and crew at ports of departure and on the voyage; and of the regulations also to be observed in the inspection and treatment of vessels on arrival at ports of destination in the United States. The supervising surgeon general of the marine hospital service is required to examine the quarantine regulations of all State and municipal boards of health, and at ports or places which are found to have no quarantine regulations under State or municipal authority, where such regulations are, in the opinion of the secretary of the treasury, necessary, and at ports or places where State or municipal regulations exist, which, in the opinion of the secretary are not efficient, the secretary is empowered to make additional rules which after being promulgated, are to be enforced by the sanitary authorities of the States and municipalities if they will undertake to execute and enforce them, but if said authorities refuse or fail, the president shall adopt such measures as are necessary to their enforcement.

The law further specifies that it shall be the duty of the supervising surgeon general of the marine hospital service, under the direction of the secretary of the treasury to perform all the duties in respect to quarantine and quarantine regulations which are provided for by this act.

It further provides that information shall be obtained of the sanitary condition of foreign ports and places through the consular officers of the United States; that weekly reports shall be obtained of the sanitary conditions of ports and places within the United States, and for the collection of such other information affecting climatic and other conditions of the public health as may be pertinent. Weekly extracts of the consular and other sanitary reports are to be prepared and published, and transmitted to the collectors of customs, State and municipal health officers and other sanitarians. The law further permits the secretary of the treasury to remand an infected vessel from any port, which is not provided with proper facilities, to the nearest national or other quarantine station, and after treatment at a national quarantine station, with a certificate furnished by the United States quarantine officer, a vessel shall be admitted to entry at any port of the United States named in the certificate. But at ports where sufficient quarantine provision has been made by State or local authorities, the secretary of the treasury may direct vessels bound to said ports to undergo quarantine at said State or local station.

An important section of this act is that which gives the president the right to prohibit in whole or in part the introduction of persons and property from such countries or places as he shall designate, and for such period of time as he may deem necessary, whenever by reason of existence of cholera or other infectious or contagious disease in a foreign country there is serious danger of the introduction of the same into the United States, despite the quarantine defenses.

Provision is also made that if a State wishes to surrender the use of its quarantine buildings and disinfecting apparatus to the United States, the secretary of the treasury is authorized to receive them and pay a reasonable compensation to the State for their use.

The first step under this new law was the framing of regulations for vessels at foreign ports. To assist in this duty a board of medical officers of the marine hospital service was convened, and the regulations framed were approved by the secretary of the treasury February 24, and duly promulgated. These regulations prescribe the form of the bill of health; the definition of an infected port; what vessels shall be inspected before the bill of health is granted; the time and method of making the inspection, with all necessary details for the enforcement of cleanliness and perfect sanitation including disinfection, and relating both to the vessel itself and the cargo, crew and the passengers. both steerage and cabin. In ports infected with cholera, passengers of the cabin class must produce evidence as to abode during the four days immediately preceding embarkation, and if necessary they and their baggage may be detained and the baggage subjected to such disinfection as is necessary. Steerage passengers in a cholera infected port, or from a cholera infected place must be detained five days under medical observation, and their personal effects and baggage must be disinfected by steam. The regulations further forbid the shipment of certain articles of bedding and clothing from an infected port, also certain articles of merchandise, such as old rags, old jute and old gunny, during the prevalence of an epidemic and for thirty days after it has been officially declared at an end. All rags at all times are to be disinfected before shipment to the United States.

Under the law these regulations are to be enforced at foreign ports, either by United States consuls, or by medical officers of the United States government, when said medical officers have been detailed by the president for that purpose.

An examination of the records shows that the chief ports of embarkation of the immigrants most liable to bring contagion are as follows:

Southampton, Liverpool, Hamburg, Bremen, Rotterdam, Amsterdam, Antwerp, Havre, Marseilles, Genoa and Naples. Accordingly a medical officer of the marine hospital service has been detailed by the president to serve in the office of the consul at each of the ports named. These officers have all had experience with ships, and with but two exceptions have had actual quarantine experience. They have been at their respective stations now for a period of two months, and their reports show both the necessity of their presence and the good results of their activity. This is a new departure in quarantine—quarantining in foreign lands—and the ultimate result may be looked for with great interest. Whatever the result may be, certain it is that the presence of these officers in European ports has diminished in a great degree the danger of introduction of cholera and other diseases from those ports. Their relations in one or two instances with the foreign governments were in danger of being strained, but this danger has been averted both by their tact and good judgment, and because of the all powerful United States law, which practically says to foreign officials that should they object to the official acts of these officers, the alternative is the refusal of the bill of health and the cutting off of all commerce between their ports and the United States.

For securing uniformity of action among these medical officers, and that the bureau may be informed as to any special difficulties in enforcing the regulations, an inspecting medical officer is now under detail, visiting each of these ports for the purpose named.

To aid these medical officers and the consuls in the performance of their duty a letter of instruction has been issued by the State department, addressed particularly to United States consuls at interior places in Europe and Asia, directing that when merchandise or immigrants are about to leave or have left, any section within their respective consulates where cholera prevails, they shall notify by telegraph the United States consul or medical officer at the seaport selected for embarkation that the officer may be prepared to enforce the detention and disinfection required.

On May 4 a circular was issued to consuls and medical officers, requiring all baggage of immigrants coming from any port to the United States to bear a label certifying to either inspection or disinfection. Furthermore, each immigrant is to be furnished with an inspection card giving his name, last residence, name of ship, port and date of departure and a reference number relating to the manifest which is required by the immigration regulations, and in which is contained much information regarding each immigrant. This card is to bear the stamp of the consulate. It is also to be stamped or punched at the quarantine at the port of arrival, and again at the immigration depot, and it is to be held by the immigrant until he reaches his point of destination. These inspection tickets, and the labels upon the baggage will furnish to the health officers of the interior States information which they have much desired with regard to immigrants coming within their borders. These provisions also insure care and accuracy on the part of medical officers and particularly on the part of United States consuls at ports where immigrants do not usually embark for the United States, but which may be sought by them in the hope of avoiding the enforcement of the stringent rules at ports where medical officers have been stationed.

For the vessel on the voyage certain rules have been promulgated relating to inspection and sanitation, isolation of the sick and requiring a clinical history by the ship surgeon of all cases of sickness to be delivered to the quarantine officer at the port of arrival.

Having thus detailed the precautionary measures set in operation abroad, I will now narrate briefly those which have been taken on this side of the Atlantic.

First I may refer to the danger which, for some time, seemed to be imminent by reason of immigration through Canada. The Canadian laws do not provide for the inspection and sanitation of ships and passengers at foreign ports, and it was feared on this account, there would be a large deflection of immigration to Canada. But owing to the public spirited policy of the Canadian government, and the energy and efficiency of the chief quarantine officer, Dr. Montozambert, the danger of introduction of cholera through Canada has been reduced to the lowest possible degree short of prohibition of immigration. All immigration into Canada is now via the St. Lawrence river. Forty miles below Quebec is statoned the Grosse Isle quarantine station, with perfect apparatus for scientific disinfection and accommodations for the sick and suspects. This station is reserved for infected vessels. Further up the river at Quebec, is the Louise Embankment, where is located a complete disinfecting plant; while at Point Levis, directly opposite, is located another. All immigrants, whether from infected or non-infected countries and though coming on non-infected vessels are obliged to undergo inspection at one of these two points, and all their baggage is disinfected by steam, the containers being washed with a solution of mercury. The disinfection is not one in name; but is thorough and complete. The Canadian government has very courteously assented to allow representatives of the marine hospital service, two in number, to be stationed at Quebec for the purpose of inspecting the disinfection and labeling the baggage and giving certificates to immigrants bound for the United States.

It was feared at one time that Halifax would be a point of danger during the present season. Halifax is the winter port of entry for Canada, and it was proposed to continue the landing of immigrants there through the summer, but the steamship agents were informed that the quarantine plant at Halifax is insufficient; and therefore immigrants arriving there and seeking entrance into the United States through Canada would be subjected at the border to every possible delay through inspection and disinfection by the United States officers, or perhaps be turned back into Canada. Assurances were thereupon given that no immigrants will be carried to Halifax.

Thus it would seem that protection against the introduction of cholera through Canada is as complete as it can be made.

With regard to the quarantine and maritime ports in the United States it will be remembered that the new law provided that an examination should be made of all State and local regulations, and if any were found insufficient, the secretary of the treasury should make additional ones. In accordance with this provision a request was sent to all quarantine authorities to transmit their rules and regulations to the marine hospital bureau. A general response followed, and after examination it was evident that to determine upon the sufficiency of all, a minimum standard must be established embodying what should be required of every quarantine station in the United States.

(*To be continued.*)

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# SOCIETY PROCEEDINGS.

## American Surgical Association.

*Buffalo, N. Y., May 30 to June 1, 1893.*

(*Concluded from page 670, Vol. XXI.*)

Dr. Chas. B. Nancrede of Ann Arbor, thought that there was no danger of hemorrhage in the clamp and cautery method provided it was done properly, and the tissue not burnt off rapidly. He had never seen primary or secondary hemorrhage from it.

Dr. A. G. Gerster of New York, said that hemorrhage never occurred with the clamp and cautery method, provided the cautery was properly applied and not too much heat employed.

In the Whitehead or Lange operation profuse hemorrhage does not occur unless the incision is carried in too far. It should hug closely the inner margin of the sphincter, and the mucous membrane should be stripped off without the use of the knife. In the final transverse division of the mucous membrane a small portion only should be cut at a time, and this secured by suture before another portion is cut.

Dr. Roswell Park of Buffalo, exhibited anatomical specimens illustrating a method of preparation. Preparations of joints were shown made thirteen years ago, in which the joints were still movable, although they had been exposed to the air.

### REPORT OF AN ATTEMPTED BLOODLESS OPERATION FOR MALIGNANT POLYPUS SPRINGING FROM THE BASE OF THE SKULL,

by Dr. Roswell Park of Buffalo.

The case was one of rapidly growing malignant tumor completely filling the pharynx, in which operation was attempted at the patient's request. In order to lessen danger from hemorrhage, he adopted the method suggested by Senn of isolating the trachea and passing a rubber tourniquet around the balance of the neck. While there was no arterial hemorrhage, there was excessive venous bleeding. The jaw was resected and the malignant material removed. During the operation respiration ceased and efforts at restoration were required for forty-five minutes before the operation could be completed. The patient left the table in apparently good condition, but died the next morning from shock, there having been no bleeding.

The following were elected as the officers for the ensuing year:

President, Dr. J. Ewing Mears of Philadelphia; first vice president, Dr. Roswell Park of Buffalo; second vice president, Dr. Lewis S. Pilcher of Brooklyn; secretary, Dr. J. R. Weist of Richmond, Ind.; treasurer, Dr. John B. Roberts of Philadelphia; recorder, Dr. De Forest Willard of Philadelphia; member of council, Dr. J. Collins Warren of Boston; chairman of committee of arrangements, Dr. L. M'Lane Tiffany, Baltimore.

The following were elected to membership:

Drs. H. S. Burrell of Boston; Perry H. Millard of St. Paul; Albert B. Miles of New Orleans; Samuel J. Mixter of Boston; John W. Elliott of Boston; John Parmenter of Buffalo; J. McF. Gaston of Atlanta.

To honorary membership: Prof. Carl Gussenbauer of Prague.

### THURSDAY MORNING SESSION.

The first paper, read by Dr. J. William White of Philadelphia, was entitled

### THE PRESENT POSITION OF THE SURGERY OF THE PROSTATE.

In regard to the nature of the prostatic enlargement it was held that the prostate gland was a part of the sexual apparatus and not chiefly an accessory organ of micturition, and that the growth or growths which make up the enlargement are analogous to the fibro-myomata so frequently found in the uterus.

The changes in the bladder are due to the mechanical obstruction, the circulatory disturbance produced by pressure on the prostatic veins and to septic infection.

The symptoms of prostatic enlargement were discussed at length. In regard to treatment, purely expectant treatment is proper only where the enlargement has produced no symptoms and catheterization is easy and shows no residual urine. Ergot is the only drug that offers any prospect of usefulness, but it is far from demonstrated that it has any destined effect. Palliative treatment consisting in the systematic use of steel sounds for dilatation and the employment of the catheter is of great value in a large number of cases.

The following operative measure discussed: Overstretching of the prostatic urethra. This is not likely to be followed by good results in cases where the median lobe and the vesical neck are chiefly involved. In lateral hypertrophy where the urethra is simply narrowed it may be of use; 2. Perineal prostatotomy should be regarded as that of choice in cases in which with marked diminution of the expulsive force, and with cystitis there are evidences of widespread degenerative disease or of distinct renal disease, toxæmia and general feebleness; 3. Perineal prostatectomy, where the growth can be reached by the finger and is of small size or pedunculated perineal prostatotomy can always be converted into a prostatectomy; 4. Supra-pubic prostatectomy is the operation to be preferred in those cases in which palliative treatment having failed there are unmistakable indications that the local conditions are worse, the general health remaining unaffected.

In conclusion, the speaker said that some time ago the thought occurred to him that possibly if the analogy between uterine fibro-myomata and prostatic growth was a real one, castration might have the same effect upon the

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SATURDAY, JULY 1, 1893.

## INSTRUCTION IN PSYCHIATRY IN AMERICAN MEDICAL COLLEGES.

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The value of psychiatrical instruction could not, of course, be estimated by this method. The reports received by the writer of the paper were naturally from all schools of medicine, and doubtless included some of the worst or poorest as well as some of the best institutions. One thing, however, may be accepted as a fact—that is, however gratifying the recognition of the fact that some instruction in this regard is or should be a necessary part of any medical education, the opportunities for affording this instruction in any adequate manner are far from being equal in the different localities. Mere oral instruction by lecturers has only a little advantage over the reading of text books, and clinical faculties are not everywhere available and when they are to be had are too seldom properly utilized. From the necessities of the case asylums are commonly located inconveniently for clinics and an occasional walk through their wards affords only a very imperfect notion of the realities of mental disease. Students are not likely in any large numbers, to make expensive excursions into the country at such frequent intervals as would be required to furnish them with any correct notions of insanity from actual clinical experience. Asylums or hospitals for the insane do not moreover promise attractive interneships, certainly not as compared with the advantages of such positions in general hospitals. It is only when the institutions for the insane are located in the great medical centers or are in their immediate vicinity so as to be readily accessible without too great expense of time or money, that they can be profitably utilized for clinical instruction. When all these conditions are met it too often happens that owing to unenlightened public opinion and indifference or hostility of officials they are altogether unavailable for the purpose. It would be easy to count on one's fingers the localities where proper clinical instruction is possible and it would be hard, we venture to say, to name half a dozen of these where all the advantages are fully utilized. The condition of affairs is not, therefore, one that justifies any too much complacency.

One point that seemed to give satisfaction to the reporter on the subject was the increasing number of superintendents filling these chairs. This ought to be an encouraging feature of the case, but in view of the methods of appointing these officials in some parts of the country our satisfaction must here also be a somewhat qualified one.

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It may be some consolation to believe that the advantages for clinical instruction in psychiatry are limited in the same way in other countries. This, however, ought not to induce any undue satisfaction over the condition of things here.

## CONSTITUTIONALITY OF GIVING EXAMINERS SUPERVISION OVER MEDICAL COLLEGES.

In Iowa there is a statute, as in many another State requiring that every person practicing medicine, surgery, or obstetrics within the State, shall first procure a certificate from the board of medical examiners of his right to do so; and, which, after providing that graduates in medicine desiring such certificates shall present his or her diploma to the State board of examiners for verification as to its genuineness, provides as follows: If the diploma is found genuine, and is issued by a medical school legally organized and in good standing, of which the State board of examiners shall determine, and if the person presenting and claiming such diploma be the person to whom the same was originally granted, then, the State board of examiners shall issue its certificate to that effect, signed by not less than five latter that oophorectomy does upon the former. At this time he had not read of the alleged prostatic hypertrophy in eunuchs, geldings, etc. He instituted a series of experiments on dogs to determine the effect of castration on the size of the prostate. It was found that the average weight of the prostate in dogs was 35.3 grams. The dogs were killed at varying intervals after the operation, the longest period being seventy-two days, and in all there was a marked diminution in the weight of the prostate, the gland varying in weight from 2.5 grams to 5.5 grams according to the weight of the animal and the period at which it was killed.

The author did not wish to be understood as advocating the measures which these studies would indicate. He simply presented the subject as a line of thought which had occupied his mind at odd times in order to have the criticism of the Association. As regards the employment of castration as a therapeutic measure in prostatic hypertrophy, the final answer must be left with the patient. If the time comes when we can promise equivalent results to those obtained by oophorectomy in uterine fibroids, there will probably be no lack of cases willing to submit to the operation.

Dr. Roswell Park of Buffalo, read a paper entitled

### THE IMPORTANCE TO THE SURGEON OF THE BACILLUS COLI COMMUNIS.

The literature relating to the colon bacillus was thoroughly reviewed and evidence presented showing that this organism which is constantly present in the intestinal canal is not always a harmless inhabitant, but becomes at times an active invader, and does not confine itself to the intestinal mucosa where it may set up most active desquamative lesions, but may pass this barrier and penetrate into the general circulation and exercise pernicious activity in numerous other organs and toxic effects upon the system at large.

Herniary cholera so-called, is due to intoxication from the products furnished by the organisms in a virulent condition. From the intestinal canal the colon bacillus may ascend along the biliary passage determining lesions in the gall bladder or liver. It is known to be one of the frequent factors in peritonitis of intestinal origin. In the kidneys as well as in the bladder the colon bacillus may exert pathogenic and pyogenic properties. The organisms may be introduced from without as upon a catheter or may be transferred from their normal habitat by some traumatism of the natural channels. The endocardium, the meninges, the pleura, articular serous membranes and the lungs are at times not exempt from the manifestation of its activity. It is probable that there is a form of post operative septicæmia due in no direct way to the operator or operation, but is in fact what it has often been called, an entero-sepsis, and due to the migration from the intestinal canal of the colon bacillus. Constant attention to the intestinal canal should therefore be the watchword of the surgeon both before and after operation.

The author reported six cases from his own practice in which the colon bacillus was found, and in some instances it was the only organism present. The cases were as follows: 1. Cancer of intestine with abscess; 2. Recurrent peri-appendical abscess; 3. Acute abscess of the liver; 4. Gangrenous appendicitis; 5. Acute appendicitis, with perforation and obstruction of the bowels; 6. Cholecystitis suppurative.

Dr. James M. Barton of Philadelphia, presented a paper entitled

### WHEN SHALL WE REMOVE THE VERMIFORM APPENDIX?

Surgeons still differ on this subject, but they are probably removing the appendix less frequently than formerly. The author had been less fortunate in those cases where he had removed the appendix, so that now in those cases where there is a circumscribed abscess with no general peritonitis and no symptoms of intestinal obstruction, he does not search for or remove the appendix. In nine cases of abscess of the vermiform appendix operated on last year, and when the appendix was not removed, all recovered. In this class of cases portions of the appendix have already sloughed away and the opening into the bowel is firmly closed, and there is little danger of fecal matter making its exit through the appendix.

By not searching for the appendix, the time of operation is much lessened and the loss of blood is not so great. The drainage tube and gauze keep their places better when the walls of the abscess cavity are unbroken.

The two most fatal complications after operation are septic peritonitis and obstruction of the bowels. There is of course less danger of peritonitis if the adhesions are not broken down. When there is obstruction, if the obstructing portion of bowel can be identified, it should be liberated. If it can not be, after the abscess cavity has been disinfected, all adhesions should be separated. In this case the appendix should be removed. If there is no obstruction and the adhesions are separated, they may unite in such a way as to cause obstruction.

The following conclusions were presented:

1. An unruptured appendix, distended and discolored should be removed.
2. When rupture of the appendix into the general peritoneal cavity has occurred, the appendix should be removed and the abdomen flushed.
3. When a localized abscess that has existed for some days or weeks has ruptured into the general peritoneal cavity, the appendix should be removed and the abdomen flushed.
4. When adhesions to the abdominal wall have formed, open the abscess and drain, being careful not to break the adhesions that separate the abscess cavity from the general peritoneal cavity. The appendix should not be searched for nor removed.
5. When symptoms of obstruction are present empty the abscess, with the general peritoneal cavity well protected with gauze; disinfect the abscess cavity, then examine for the adhesion causing the obstruction, and if able to identify it, separate those adhesions only. If it can not be identified then separate all adhesions and remove the appendix.

When abscess has formed and there is no general peritonitis or symptoms of obstruction open the abdomen, protect the general peritoneal cavity with gauze. Then open the abscess and drain; do not search for nor remove the appendix.

The following papers were read by title:

Cystic Growth Within the Internal Condyle of the Femur, by Dr. Thomas G. Morton, and Dr. William Hunt.

Gun-shot Wounds of the Intestines. Report of thirteen cases, by Dr Albert D. Miles, New Orleans.

Dislocation and Injuries of the Semi-lunar Cartilages, by Dr. S. J. Mixter, Boston.

Report of Cases of Anthrax, by Dr. H. L. Burrell, Boston.

Lymphangitis Accompanied with Blood Poisoning and followed by Multiple Abscess, by Dr. J. M'Fadden Gaston, New Orleans.

Clinical and Medico-Legal Observations in Certain Forms of Spinal Injury, by Dr. Perry H. Millard, St. Paul.

A Series of Operations on the Elbow, by Dr. J. S. Wight, Brooklyn.

The Association then adjourned to meet in Washington the first Tuesday of May, 1894.

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This was claimed to be in violation of a provision of the constitution that all laws of a general nature shall have a uniform operation; and the general assembly of the State shall not grant to any citizen or class of citizens, privileges or immunities which, upon the same terms, shall not equally belong to all citizens; and, providing further, that no corporation shall be created by special laws, but the general assembly shall provide by general laws for the organization of all corporations to be created. But these laws are general and uniform, not because they operate upon every person in the State, for they do not, but because every person who is brought within the relation and circumstances provided for, is affected by the law. They are general and uniform in their operation upon all persons in the like situation, and the fact of their being general and uniform is not affected by the number of persons within the scope of their operation. The statute under consideration is clearly within this rule "because every person who is brought within the relations and circumstances provided for is affected by the law." It is uniform in its operation "upon all persons in the like situation," and grants no privileges or immunities that do not equally belong to all citizens. So holds the Supreme Court of Iowa in the case of the Iowa Eclectic Medical College Association v. Schrader, (55 N. W. Rep. 24). The State board is not a corporate body, but a branch of the government. The authority to refuse certificates to graduates of medical schools not in good standing does not extend special privileges or immunities to other schools that are determined to be in good standing. True, no appeal has been provided for, but the students of a school which has not been determined to be in good standing, in common with all other persons, have the right to go before the board and be examined, without regard to diploma, and, if found to have the requisite qualifications to receive a certificate. The board acts under the restraints of law that require proper inquiry into the matters to be determined, and it may not be presumed that the board will act arbitrarily and without investigation. The board can not arbitrarily determine whether a school is in good standing. If it does, its action is illegal. Consequently after the board has recognized a school as in good standing, it can not afterwards refuse to issue certificates to a graduate of such school until its standing shall have been re-determined. Neither is it legal for it, when charges are preferred against a recognized college, by a stranger, in May, to refuse it recognition and adjourn until November, leaving it in doubt in the mind of the public whether or not the school and its graduates are in good standing. Such action is illegal as reversing a former action of the board without any investigation and without sufficient cause. This is not to say that the board is concluded, by having once determined that a school is in good standing, from thereafter determining differently, but only that it has no power to do so arbitrarily and without investigation. Nor is it to say that such inquiries must be attended with the formality of a trial in court, but the determination must be based upon inquiry and facts, and not upon the mere arbitrary will of the board. The standing of a school, as contemplated in the statute, is rather what the school is, in respect to the thoroughness of its course, then what it may be reputed to be. The board is fully authorized to determine, upon proper investigation, that a school is not in good standing that does not meet the minimum requirements as to extent and thoroughness of its course. While the graduation of an unusual per cent. may be ground for closer scrutiny, it may well be questioned whether the board may arbitrarily say that but forty-five per cent. shall be permitted to graduate. Much was said in argument about the composition of the board as to the different schools of medicine, but as the statute does not require that the different schools shall be represented on the board its composition can not affect its jurisdiction, or the legality of its acts in the respect under consideration.

## THE DECREASING BIRTH RATE.

Dr. J. S. Billings contributes to the June issue of the *Forum* a brief but suggestive article on the decrease of the birth rate in the United States, as shown by the figures of the recent census. The subject is not entirely a new one, but its treatment by so high a medical authority in an article for popular information merits notice. It will probably call some general attention to the subject, and it is well that it has been handled by one who can give a fair statement of the facts with judicious scientific deductions from the same, instead of by a popularizer whose main idea might be to produce a sensational and alarmist article. Dr. Billings, while he sees certain evil tendencies in the causes of this decreased birth rate, does not make them the sole text of his paper, nor does he consider the falling off in the number of births as necessarily an unmixed evil. Even were it altogether an evil, the comparative statistics do not show that this country as a whole is worse off than most other highly civilized nations, and they do show that its birth rate is decidedly above that of some portions of western Europe.

The causes of a decreasing birth rate are very numerous, and some of them are undoubtedly such as can not rightly receive medical commendation or countenance. The underlying cause, however, as any one may see, is the increasing difficulty of the struggle for existence, and the ratio of births to the population may be taken as one of the principal indices of the intensity of this struggle. Of course, the greater the number of wants the sooner will this difficulty be felt, hence the ratio of births will decline sooner amongst the educated and cultured than in what may be called the lower classes, whose needs are fewer and whose ideals of life are less refined and luxurious. Perhaps, also, physical causes may come in play here; the relations of the sense of hunger to the generic appetite, and the fact that overfeeding reduces fecundity even in the lower animals, are suggestive in this connection. The spread of education and of habits of comfortable if not of luxurious living are therefore enough in themselves to largely account for the facts in this regard, as we find them.

The fact that the greatest decrease in the birth rate seems to have occurred in the regions where the colored race is most numerous seems a little anomalous to Dr. Billings, and he is inclined to account for it, in part at least, by imperfections in the statistics. These may have existed either in the figures of the late census or that of 1880; in either case the apparent increase might be partially thus accounted for, but it seems not unlikely that the great changes in the conditions in the southern States within the past two or three decades are now having a more decided effect than ever before, and affecting the colored race as much or perhaps even more than the white.

A noteworthy fact pointed out by Dr. Billings is that the present conditions as to population were predicted as long ago as 1843 with a very close approximation to absolute accuracy. Looking to the future a still further decrease in the birth rate may be reasonably expected before population, with its present tendencies, reaches what we may call its regemen or equilibrium. Under present conditions, with the increased knowledge and success of sanitation, the infrequency of wars and general pacific tendency of our civilization, and the gradual filling up of all lands suitable for civilized habitation, a decreasing birth rate would seem to be almost the only protection against the realization of the worst anticipations of the Malthusians. While this is true of the United States, it applies still more forcibly to the overpopulated sections of western Europe, which can not very much longer relieve themselves by sending their surplus population to this country.

## PIT BURIALS IN LONDON.

Some curious testimony has been recently brought out incidentally in an inquiry by a committee of the British House of Commons in regard to the certification of deaths in England. It seems to be the custom in some of the cemeteries around London to make large graves or pits which are kept open for days and weeks to receive bodies which are piled one upon another till the coffins are often crushed by the superincumbent weight. One of these pits for example, was kept open for forty days from June 6, 1892, according to one of the witnesses, who mentioned also other instances. The chinks between the adult coffins were filled in with those of children and there seems to have been nothing to prevent surreptitious abstraction or insertion of bodies had any one been so inclined. Identification was apparently totally disregarded.

The medico-legal and sanitary objections to such a condition of affairs are sufficiently obvious, and it is surprising that it has been so long permitted to exist in a civilized country like England when sanitary authorities are supposed to have full sway and law is so prëeminent. As the *British Medical Journal* says, very justly, it is a satire on their civilization.

# DOMESTIC CORRESPONDENCE.

## The Present Status of the Medical Profession.

To the Editor of the Journal of the American Medical Association:

*Dear Sir:*—An article on this subject by Dr. Dudley S. Reynolds, in the June 3 issue of The Journal, reminds me of the case of a real estate friend of mine who has invested largely in acreage near our city, the demand for which has never been very brisk. Notwithstanding that he has been unable to unload, my optimistic friend periodically takes stock of his investment and adds a good round percentage to his estimate of its value. This he has been doing for a number of years and, as a matter of consequence his books show him to be a very wealthy man, while as a matter of fact he would have difficulty in realizing the original purchase price of the property.

Dr. Reynolds' article shows the present status of medical education and the requirements for graduation to be eminently satisfactory and pregnant with hope. Unfortunately, however, his article is based on nothing more substantial than the copies of College Announcements in his possession. While his paper showing has, therefore, so much of the color of the rose the question recurs whether the rock bottom facts warrant his conclusions. I venture the opinion (an opinion, moreover, which is not merely an opinion) that they do not. The announcements of our colleges are far from being guarantees that the requirements as therein published are faithfully lived up to. I am, for instance, cognizant of the case of a young man who, without previous attendance at lectures in any other medical school was graduated at the end of a single session from an institution which advertises a requirement of attendance on three six months' courses. Again, let me give you a few extracts, *verbatim et literatim et punctuatim*, from papers submitted by students who were graduated from a so-called medical college in good standing in the Association of American Medical Colleges, and whose announcement would lead you to believe that it is devoted to the cause of the higher medical education:

"Inflamatory rumatism is lactic acid in the blood it is complicated some times with gonerhea and inflamations and sevear colds. Increas of blood to the part acumilation of white corpucles to the part braking down into puss pain heat rise of temperature swelling pain on bending the part or on pressure readress swelling emation. Treatment give salcilate soda salciac acid apply oil of wintergreen over the parts give rest to the parts and apply hot or cold applications."

Treatment of eclampsia: "To keep the patiant from stricking his head or limbs against and place the patiant in a horzontal position to favor respration circulation. Give bromide of potass. to act as a direct sedative or to excite motor suseptibility of the medula oblongata of the nerve centeres and keep perfect qeuiet."

"Cholor infantum is due to a tomen symtom comences with Diarrhea first stools partly soft yet Liquid and stains the clothing a green color with a musty Odor vomiting pain and Rise of temperature and rapid prostration. May efect the brain when the patiant Roles heat and sleep with eyes open give Bromide potass for this first give Hyd chlor mit in small doses every hour and epecac at first and then Bismuth and Shlicylyc acid give stimulent to keep up the strenth."

"In false croup the farinx is not involved there is false membrane we dont get the spasms."

"There are 3 Verietys of pnemonia lobor Lobular interstiscial lobor is where we have all the lobes of the lung involved we have 3 stages. The inflamation extends from below upwards the seat of inflamation is in the alveoli or air vescle. Stage of ingorgement last 24 to 70 days red hepatization 5 days."

"The Teory of diebetis is an eretation upon the floor of the 4th ventrecle, may be do to Violence or High liveing."

The only hope for improvement in medical education lies in the divorce of the licensing from the teaching power. While there are many well equipped medical schools, and many honest medical schools, which endeavor with their limited facilities to do honest work, it is a notorious fact that in very many others there is no attempt at imparting the "laboratory instruction in chemistry, toxicology, urinalysis, normal and pathological histology, bacteriology, pathology, and hygiene" which Dr. Reynolds tells us "nearly every medical college in the United States now requires."

The fact that students are graduated on the strength of papers from which I have given the above extracts, is its own commentatory but when (oh tell it not in Gath) such students are immediately after graduation appointed to positions as teachers in their *alma mater* (Heaven save the mark!) is it not high time that something more were done for the cause of medical education than the writing of gratulatory papers founded on rose colored announcements?

I am pleased to observe that the Illinois State board of health has, since my presentation to it of certain facts, refused to license the graduates of one institution on the strength of the diploma of that institution.

J. J. Mulheron, M.D.

Detroit, June 15, 1893.

## Altitude Per Se.

To the Editor of The Journal of the American Medical Association:

The relative importance of different climatic attributes in the cure of phthisis is one of the most difficult problems in climatology to solve.

The arduousness of the task is not lessened because the inquirer is an invalid himself seeking the total elimination of his tubercular bacilli. The liability of his being unduly influenced by his own experiences and environment is too great. Nevertheless it has to be acknowledged that much of the good work which has been done in climatology has been actuated by the intense interest of personal need. I am reminded that in our own country this field has been covered by such men as Solby, Fisk, Anderson, Keating, Tindale, Loomis and Gleitzman, whom I happen to know were one time invalids. Nor would I wish to dodge the applicability of the criticism to my own writings simply because I waited three years after starting out as a health seeker, before announcing my conclusions to the Centennial medical congress in 1876. I refer to the argument presented and afterward embodied in a brochure, "The Preferable Climate for Consumption," which the legislature of Colorado did me the honor to order printed for public distribution. This treatise has never received so thorough and withal so complimentary an overhauling, as appeared in the issue of The Journal of June 10, by Dr. Boyd Cornick of Knickerbocker, Texas.

While I have to question the proving in this well written article, of any point against rarefaction of the air as an important factor in "the preferable climate," yet I wish to express my great pleasure for the important position in this controversy accorded my work. It is not otherwise than gratifying to me to be charged with so much of the molding of the medical opinion as to the best make up of climate for combating pulmonary consumption. There are indeed, only a very few points in Dr. Cornick's article I would wish to correct.

Except for taking your valuable space with my personal views, I would *in extenso* remind the doctor and his readers—1. That he reasons from his own peculiar experience commencing, as I understand it, last October, and that the approaching hot weather in Texas may enforce, even in his own case, a better appreciation of the "coolness or cold" which will be found as summer comes on in the elevated regions northwest of his locality. 2. That the argument in favor of the mechanical influence upon contracting and diseased processes in affected lung areas (which effect must be attributed to rarefaction of the air or elevation above sea level) is not given due consideration in his paper. It appears that one would need no better proof of some positive effect than the doctor's statement of his own case. How, having gotten along so nicely in elevated southern New Mexico, (after a breaking down of one apex had occurred in the east; fever gone and expectoration ceased) he took cold and probably (?) had some fresh inflammatory process around or near his apical cavity, the cough or irritation due to which subsided on his going down to a lower elevation.

Very well; like the pleurisies which, under similar circumstances, or due to over exertion, are relieved by rest, counter-irritation and strapping the affected side with belladonna or rubber adhesive plasters, he may also have had an acute condition which demanded the temporary suspension of exercise or high altitude treatment, which are very much alike in their effects upon actively tubercular areas of lung tissue. Considering the elements of *time* and the need of the *classification of cases*, this instance should be looked upon as exceptional, and not the rule for invalids generally. 3. The conclusion drawn from the extreme humidity of that extremest of elevated observation points—Pike's Peak—must be ruled "out of court." It is not "in it" at all. People do not and should not try to live there, least of all a pulmonary invalid. That the Pike's Peak station goes on my climatic charts of the United States in the blue shade of extreme moisture is rather a proof of the faithfulness of that climatic delineation, and is thus explained: Any equable association of moisture statistics, as relative and absolute humidity and cloudiness, to determine the relative moisture of the air will be over balanced at that high station by the high relative humidity of the air there, because Pike's Peak is so much in or above the clouds, and yet so cold that a very little absolute humidity *relatively* goes a great ways.

Let us keep *down* where the experiences of invalids are, and then try to compare these experiences with the attributes preferable for consumptives. Then *rarefaction* will, as it should, rank up in the scale along with *dryness, coolness, sunshine* and, important because necessary, *variability*. 4. I must hold firmly to my views as to the importance of increased aqueous transudation of vapor from the lungs due to rarefaction and cold, notwithstanding this criticism because, chiefly, Dr. Cornick does not take into consideration in his above calculation, the greatly increased *amount* of air which has to be breathed due to the element of rarefaction. It should be borne in mind that the necessity to breathe more air brings correspondingly increased lung action, and this brings with it increased heart action. The aspiration of blood from the right heart to the lungs and the propulsion of pulmonary blood on to the left heart, are both augmented. These internal effects, together with the lessened pressure on the periphery of the body increase capillary action everywhere, and much desired elimination is thus produced, enhancing the remedial effect of exercise and almost every other useful agent, at elevations from three to eight thousand feet above sea level. 5. It only remains for me to explain the seeming severity of my "*contra indications* to an otherwise preferable high altitude climate."

Individually I would myself, and I would expect others to, take these contra indications with a considerable "grain of salt." One does not like to, and can not lightly, assume the responsibility of the risk the invalid assumes in utilizing so positive an agency for good or for evil to affected lung tissue, as is a decided rarefaction of the atmosphere.

If the *diagnosis* which is the basis of any change to be made could always be assumed to be accurate and fully comprehensive, there would be, I think, a considerable leeway for modifying any contra indications.

Charles Denison, M.D.

Lake Geneva, Wis., June 12, 1893. Denver, Col.

# BOOK REVIEWS.

A Dictionary of Psychological Medicine. Giving the definition, etymology and synonyms of the terms used in medical psychology with the symptoms, treatment and pathology of insanity. Edited by D. Hack Tuke, M.D., LL.D. Philadelphia: P. Blakiston Son & Co. 1892.

It is indicative of the rapid advance of psychological medicine that a special dictionary should be issued, containing 1,477 octavo pages devoted exclusively to a definition of its terms.

Taking the work as a whole it is apparent that the editor and his assistants have performed their tasks exceedingly well. While minor defects can be pointed out yet they are so insignificant when compared with the general value of the work that they scarcely deserve mention.

One hundred and twenty-eight authors including some of the ablest living writers on psychology have contributed to its pages. Among these names we note those of Allbutt, Ball, Beeror, Benedikt, Bernheim, Blocq, Brunton, Buzzard, Charcot, Clouston, Erlenmeyer, Horsley, Lewis, Mendel, Norman, Page, Pontoppidan, Ribot, Savage, Sully, Tamburrini and Yellowless. It was but natural that the bulk of the contributors should be drawn from the English and Scotch writers, though there is a liberal admixture of French and German. Americans have on the contrary been almost wholly ignored, but five contributing to its pages of whom only two, Donaldson and Earle are fairly well known to readers of American medical literature. We can not but regard this omission as significant, especially when America presents such an able record in psychological research.

The work opens with an historical sketch of the insane by the editor and one on the philosophy of the mind by W. E. Coupland and then passes to special definitions. This, the main part of the work has been well done, and reflects credit upon the editor, who has certainly performed no mean task in coördinating the work of so many writers. The work is not only a dictionary but an encylopedia as well. Some terms receive but a line while other definitions are expanded into pages. Thus "alogus" receives two lines while alcoholism takes up sixteen pages. If space were not too limited it would be interesting to consider some of the more lengthy articles, but the views of most of the writers are already well known, and in the sense of the work advancing our knowledge it contains nothing worthy of comment. As an index of what is already known, and as a guide and help to the students of psychiatry it will prove invaluable.

Mineral Springs and Health Resorts of California. With a complete chemical analysis of every important mineral water in the world. Illustrated. A prize essay; annual prize of the medical society of the State of California, awarded April 20, 1889. By Winslow Anderson, M.D., M.R.C. P., Lond., M.R.C.S. Eng., etc., joint editor and publisher of the *Pacific Medical Journal*, teacher of chemistry and materia medica in the University of California, etc. San Francisco: The Bancroft Co. 1892. Pp. 384.

Dr. Anderson has produced a book that should command the thanks not only of California, but of all medical practitioners. The profession and people of his State are under especial obligations to him for his patriotic services, and any physician who desires to profit by a personal or professional acquaintance with hydrotherapy can not read this book without appreciating the large amount of research and analytical labor involved in its compilation.

However, it is more than a compilation. For several years the author has been investigating and analyzing the mineral springs of California, and comparing them with those of the eastern States and Europe. The comparisons result favorably to the home springs, so far as all the natural advantages are concerned. He concludes that nothing more is needed, to make them as beneficial as the better known water cures, than their further development and scientific use.

There are alphabetical lists of most of the well known springs of Europe and America. There are 200 analyses of the mineral waters of America and other countries, besides about 100 analyses among 200 springs of California. The various springs are classified, and the therapeutics of the different kinds are given.

The climatic, scenic and domestic advantages of the California health resorts are dwelt upon in a very attractive, not to say fascinating way. Indeed, the descriptions and the many charming illustrations that adorn these pages are enough to create a strong desire to visit this golden garden of the gods.

While the author sensibly deprecates the commercial cant of those resort promoters who claim cure-all properties for their springs, he lucidly places the various waters in their rightful relations to health and disease. He points out the ailments that will be benefited or injured by certain mineral waters, and how the uses and abuses of the baths result.

With the natural advantages of climate, proximity and economy of these water resorts, it is difficult to understand the American fad of visiting such springs as Carlsbad, where one witnesses every morning the depressing, death-suggesting pageant of the marching miseries of all nations in funeral procession abut the springs, accompanied by the fantastic strains of the Straus waltzes. The scene is grotesque to the spectator who glories in good health, but the writer felt when looking on this picture that it was the last place on earth to choose as a stepping stone to health and good cheer.

An infinite contrast to this melancholy spectacle is presented by the quiet and isolated health resorts of our own luxurious king State of the Golden Gate. Here the sufferer has for his companions, not wasting disease and waiters upon death, but the refreshing songs of the birds and brooks, the health-inspiring looks of the gatherers of fruits and the miners of precious metals, the most lavish growths of plants and trees, the most luscious of fruits, the most gorgeous of flowers, the most invigorating air, the sublimity of mountain scene and ocean expanse, and the most hospitable inhabitants of the globe.

TRANSACTIONS OF THE FOURTEENTH ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION, held in the City of Boston, June, 1892. New York: D. Appleton and Co. 1893. Pp. 120.

Nineteen of the forty-five active members were present at this meeting, and nineteen papers were read.

The volume opens with an address by the president of the society, Dr. S. W. Langmaid, outlining its history and work briefly, and proposing an increase in its membership.

Dr. D. B. Delavan presented a paper on "The Influence of certain Diathetic Conditions upon the Prognosis in Operations upon the Throat," in which he concludes that: "1. Rigid examination as to the possible existence of the hemorrhagic diathesis should be made prior to operation in every case. 2. In the existence of hemophilia, operation by any procedure at present known is absolutely contra indicated. 3. Since many of these cases urgently require relief, it is most desirable that a method reaching them more satisfactorily than any heretofore practiced be suggested." However, according to the observations of Dr. J. L. Watkins, this condition is due to the deficiency of calcium salts in the blood, especially of chloride of calcium, and the administration of these salts will cause the blood to coagulate.

Dr. S. H. Chapman related some unusual pathological conditions of the upper air passages coincident with attacks of the grip. One of these was the formation of a false membrane, not diphtheritic, in the larynx. The discussion on his paper brought out other like cases.

The paper that seemed to arouse the most interest and debate was on the use of sprays, by Dr. C. C. Rice. The types make him refer to lanolin as a petroleum product, although it is a solid fat obtained from sheep's wool. It is probable that he wrote lavoline, which is a liquid like albolene. The writer has seen this change made by printers a great many times, and persistently, even after corrections of proof. There are some of the most surprising statements in this paper and the discussion following it. The author deserves credit for advising against the use of the nasal douche. He prefers the oily to the watery solutions. While he warns against employing too much pressure with these sprays, he uses from fifteen pounds for the anterior nares to thirty pounds for the larynx, which is about 30 per cent. more pressure than is necessary with the most improved spray producers. He insists that the sprays should be warmed before using; why not insist that the air we breathe should be warmed? In this paper and discussion will be found a number of examples of the crotchets of our specialists. Dr. Rice emphasizes one excellent practice; that of having patients assist in their own treatment by keeping the naso-pharyngeal passages cleansed and disinfected by the use of hand atomizers at their homes.

Dr. Bosworth criticised this paper in a very caustic manner, condemning sprays of every kind. He says: "There is no such disease as catarrh, and supersecretion is a condition which we seldom have to meet. In a vast majority of cases deficient secretion exists. I except from this statement naso-pharyngitis, and really know but little about naso-pharyngitis." He unhesitatingly places the nasal douche in the hands of his patients. He says of hypertrophic rhinitis: "We do not cure these cases; the patients cure them for us." While the essayist lauds cocaine for its astringent action, Dr. Bosworth says: "It is not astringent; it does not constrict the secreting apparatus." He has abandoned it, together with his compressed air apparatus.

Dr. Wright discredits oily sprays.

Dr. Asch, speaking of the nasal douche says: "Accidents do occur and patients never forgive."

Dr. Mackenzie and others bombarded the position of Dr. Bosworth with some pretty luminous pyrotechnics. In fact, the discussion of this paper alone is worth the price of the book. It is a treat.

Dr. C. E. Bean reports three cases of that very rare and distressing affection, nasal hydrorrhœa. Two were associated with asthma and the third with hay fever. No satisfactory treatment has been found.

Another very interesting discussion is found at the end of Dr. De Blois' paper on the "After Results of Nasal Cauterization." The discussion is twice as long as the paper, and some of the discussions are even more valuable than the papers themselves.

## MISCELLANY.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.—The third annual meeting of the American Electro-Therapeutic Association will be held in Chicago, September 12, 13 and 14, at Apollo Hall, Central Music Hall Block. Members of the medical profession interested in electro-therapeutics are cordially invited to attend.

AUGUSTIN H. GOELET, M.D., *President.*
MARGARET A. CLEAVES, M.D., *Secretary.*

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers serving in the Medical Department, U. S. Army, from June 17, 1893, to June 23, 1893.

Capt. Charles E. Woodruff, Asst. Surgeon, is granted leave of absence for one month and twelve days, from August 1, 1893.

First Lieut. Harry M. Hallock, Asst. Surgeon, will on July 6, 1893, proceed to Griffin, Ga., and report to Capt. George G. Greenough, Fourth Artillery, for duty in connection with the encampment of State troops at that place.

First Lieut. J. D. Glennan, Asst. Surgeon (now at Ft. McIntosh, Tex.), will report to the commanding officer, Third Cavalry, to accompany Troop I of the regiment to Ft. Sill, O. T.

Capt. Daniel M. Appel, Asst. Surgeon, is relieved from further duty as attending surgeon for the officers and enlisted men on duty at the World's Columbian Exposition, and will report to the commanding general, Dept. of the Missouri, Chicago, Ill., for duty as attending surgeon and examiner of recruits in that city.

Capt. A. R. Chapin, Asst. Surgeon U. S. A., is granted leave of absence for one month.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week ending June 24, 1893.

P. A. Surgeon D. M. Guiteras, from Naval Hospital, Philadelphia, and to Naval Laboratory, Brooklyn, N. Y.

Asst. Surgeon R. M. Kennedy, from coast survey Str. "Bache," and to examination for promotion.

P. A. Surgeon George H. Barber, from the U. S. S. "Miantonomoh," and to the coast survey.

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# SECTION ON PRACTICE OF MEDICINE.

## CHAIRMAN'S ADDRESS—A REVIEW OF ULCERATIVE ENDOCARDITIS.

Read before the Section of Practice of Medicine at the Forty-fourth Annual Meeting of the American Medical Association, held in Milwaukee, Wis., June, 1893.

BY CHARLES G. STOCKTON, M.D.

PROF. OF MEDICINE IN THE UNIVERSITY OF BUFFALO.

*Gentlemen:*—To begin with, let me thank you for the very great honor that you have done me in electing me your chairman, and also for the ready assent that many of you have given to read papers and to take part in the discussions at this meeting. Your estimable secretary, Dr. Webster, and your chairman have done their best to provide a program that should be of interest to the Section and a profit to the profession, and it is to be hoped that before the conclusion of the session the members will congratulate each other upon the good work that has been accomplished.

In turning to the matter of the address which the chairman, by the requirement of our by-laws, must read before the Section, it has seemed to me better to select a single topic that is likely to be of general interest, rather than to make the vain attempt of reviewing the progress made in internal medicine throughout its wide field. Therefore, as a subject that seems to be as yet very unfinished, and one that has received, and yet will receive much careful study, and one that is likely to provoke differences of opinions, and perhaps interesting discussion, I have selected ulcerative endocarditis and its relations to other inflammations of the endocardium. Only a few years have passed away since the profession was content to say of endocarditis that it was a simple inflammation of the lining membrane of the heart, generally the result of rheumatism. After the appearance of Osler's classical lectures in 1885, it became clear that in some cases at least, the disease was special, and so arose the custom of speaking of simple endocarditis, acute and chronic, and malignant or ulcerative endocarditis. The extremes of this position as a result of further study, have gradually approached each other, until it seems proper to efface the separating line, and to speak of the inflammations of the endocardium not merely as one process, nor as two processes. but as the results of a great variety of specific diseases which express themselves—sometimes by hyperæmia swelling, and connective tissue proliferation, sometimes by vegetations, sometimes by loss of substance and sometimes by combinations of these processes.

Apparently the time has come for abandonment of the term simple endocarditis as a really distinctive term. True, we can not always say just what special infection is at work, nor can we always discover the path of the invading organisms; but that, we perceive, is unnecessary, since many bacteria remain latent, dormant tenants of the body until the powers of resistance are depressed by some purely incidental influence or affection, upon which the parasites finding the individual no longer refractory, are able to reproduce themselves, and take on hurtful attributes, of which formerly they were not possessed. They naturally select a convenient and fertile soil, and while they occasionally find this in the lungs, liver, spleen, kidneys, the meninges, and the serous coverings of joints, they not infrequently find in the tissues of the endocardium the most appropriate field for their manifestations.

This view of the matter is substantiated by bedside studies and by experiments upon animals, and is apparently satisfactory except when the acknowledged intimate relationship between rheumatism and endocarditis comes up for settlement.

With this rheumatism question there is undoubtedly a difficulty, and it will not be removed until we are able to explain the nature of rheumatism. If we adopt the theory of rheumatism, the cloud becomes dissipated, but if we still cling to the chemical theory of Prout, or the nervous theory of Mitchell, we can not maintain that endocarditis is always infectious. Time and space forbid an adequate discussion of this matter here, but the opinion is offered that while undoubtedly specially favored by certain conditions of the fluids of the body, and exposure to cold and damp, and by unknown hereditary influences, true rheumatic fever can be accounted for better on the supposition that it is an infectious disease than by any other hypothesis so far constructed. Of the irregular, atypical and more chronic forms of the disease it may be said that many of these are not rheumatism at all. No one can safely claim that the arthritis of gonorrhœa, scarlatina or dysentery are rheumatic, but how many other specific arthropathies are thus summarily disposed of we do not know. Before leaving this part of the subject, some allusion should be made to endocarditis arising apparently as a direct result of gout, Bright's disease, etc. In such cases it is difficult to determine that the heart involvement is owing to the diseases in question unaided by other factors. Very likely the circulating ptomaines resulting from Bright's, and the nitrogenous waste products belonging to gout may lead to changes in the heart as they do in the arteries. Whatever will produce endarteritis may produce endocarditis. But it is highly probable that this chemical abnormality of the blood is potent in a second way; that is, in making the tissues more vulnerable to other and special influences. We are not in a position to deny that the chemical faults alone are competent to induce the affection; experience leads us rather to affirmation. Still, we are not able to say in a given case that the toxæmia has not reinforced, rather, and made potential the microbic parasites of the body. And now to ascend from the level of personal opinion it may be held that, in view of facts in our possession, endocarditis is a condition which may arise from any one of a multiplicity of special causes under favorable conditions, and that in its course it may be as variable as the causes are dissimilar.

It will be seen that all forms of endocarditis bear an intimate relation to each other, and that their causes are somewhat interpendent. Nevertheless, it is evident that certain classes of endocarditis are prone to cell proliferations with subsequent adhesions, contractions and further deformities, while others are characterized by ulcerations, soft vegetations and resulting embolic infection, accompanied by severe and somewhat constant constitutional disturbances, and usually having a fatal termination. And so has come about a natural, although somewhat imperfect division of the subject into two classes, one having malignant tendencies and the other not. The former class, with which this paper particularly deals, is now commonly described as ulcerative endocarditis; but the term is faulty for the reason that ulceration may occur in cases following a benign course. The whole matter is too recent for positive assertion.

Cases of ulcerative or malignant endocarditis, depend upon the presence of one or more of a variety of microörganisms. These generally attack the heart as a result of some preceding affection, cardiac or otherwise, and for the most part are capable of exercising their special influence upon various parts of the body.

Of the special causes of endocarditis above alluded to, some excite the disease in a malignant form, and generally induce ulcerative processes. It is of these that I particularly have to speak. We know that it is no longer correct to regard these cases as identical in nature, and the suspicion, first suggested by clinical study, that the cases were open to a kind of classification has been justified by bacteriological investigations. Indeed, certain forms of microörganism have apparently the faculty of inducing endocarditis when introduced into the healthy organism, and a number which have been isolated and cultivated are regarded as special to this form of disease, not having been encountered in other affections.

Weichselbaum has discovered four such, which he calls respectively: *bacillus endocarditis griseux; bacillus endocarditis rugatus; bacillus endocarditis capsulatus;* and a fourth form which he has neither named nor succeeded in cultivating.

Fraenkel and Saenger have described a motionless fœtid bacillus endocarditis, and Lion and Girode have isolated still another.

Josserand and Roux have found a peculiar staphylococcus larger than the aureus, and Vetti has isolated a septic diplococcus and a micrococcus in cases of this disease.

The *bacillus coli communis* has been found the active agent in the development of several cases of ulcerative endocarditis. Indeed, the *bacillus endocarditis griseux* of Weichselbaum, and the *bacillus endocarditis* of Gilbert and Lion, which have been considered as special to malignant endocarditis, are now thought to be identical with the bacillus coli communis, an organism, as is well known, whose pathogenic effects are observed in diverse parts of the body, and with varying degrees of intensity.

These facts should make us careful as to accepting any single organism as special to endocarditis.

The different varieties of streptococci and staphylococci, either alone or in company, may originate inflammation of the endocardium.

Microbes have been isolated in endocarditis accompanying erysipelas, puerperal fever, typhoid fever, influenza, pneumonia, tuberculosis, gonorrhœa, diphtheria. Interesting in this connection is a case just reported by Dr. W. T. Howard, Jr., of Baltimore, (*Johns Hopkins Hospital Bulletin*, April 1893) in which a malignant endocarditis was found to depend upon a bacillus having morphologically and by culture tests all the characteristics of the bacillus diphtheriæ, although the patient appears to have presented no history of having had diphtheria.

And although the special organisms have not been recognized, it is interesting to remember that the endocarditis either goes with or follows many instances of the eruptive fevers, malaria, rheumatism and malignant neoplasms.

Before the New York Pathological Society, Nov. 9, 1892, Dr. Hodenpyl in presenting two specimens from cases of the disease, spoke of the varied microorganisms found in malignant endocarditis and said that in forty-three reported cases the *staphylococcus pyogenes albus* had been found twice, the *staphylococcus pyogenes aureus* fourteen times, the *streptococcus pyogenes* six times, the *bacillus typhosus* once, the *diplococcus pneumonia* six times, the *tubercle bacillus* once, and the *bacillus fœtidus* (probably the *bacillus coli communis*) three times, while in ten cases the variety of microörganism had not been determined.

We habitually speak of the disease as ulcerative, and yet in some instances there is found very little or no ulceration whatever, but vegetations are luxuriant. A review in *Le Bulletin Medical* (Jan. 13, 1892) says on this matter: "Infectious endocarditis may be ulcerating and vegetating and, to speak the truth, there is no line of demarkation between the two anatomical states. If it is true that in certain affections, acute articular rheumatism for example, vegetating endocarditis ought to be the rule, there can, nevertheless, be produced under the same conditions an ulcerative endocarditis. In the same way puerperal endocarditis, ordinarily ulcerative, may be vegetating. The mode of evolution depends principally upon the medium."

Dr. Frederick Taylor, in the last Guy's Hospital report, presents an admirable contribution on malignant endocarditis in which he says: "From the observations on the bacteriology of this subject already referred to, it appears that the different microörganisms are apt to produce different pathological clinical results. Thus it is stated that some organisms invade the mitral by preference, others the aortic valves; that the conditions of ulceration or vegetation are dependent on the organism."

It will be seen that the French is broader than the English view just quoted; it includes the truth stated by Dr. Taylor, and adds the results of authenticated investigations, showing that the same infection produces results in different individuals.

It therefore seems just to conclude that the nature of the lesion is dependent upon both the infective agent *and the condition of the subject infected.*

As to the actual seat of the lesions, many careful observations have been reported, and the results show the interesting fact that in the main the valves are first invaded.

Dr. Taylor remarks that in the majority of his cases, the ulcerative or fungating condition was engrafted upon a preceding valvular disease of the heart. Of the fifty-three cases which he describes, eleven were upon the right side, and the remainder on the left, and in all but one case the process was valvular.

Continental observers have devoted attention to determining whether the malignant process begins upon the surface of the valve or within the structure of the valve.

Saenger maintains that in a pathological state the valves may contain vessels, and in these vessels colonies of bacteria have frequently been found.

So there seems to be ground for the position that the process may be primarily intra-valvular.

Indeed Cornil and Babes have found microbes here when none could be discovered on the surface of the valves, and Hanshalter and Lion were able to discover the organisms in the connective tissue of the valves, when the surfaces were free.

On the other hand, in many cases, the disease undoubtedly first appears upon the free surfaces of the valves, and the invasion is most likely to be at that part where the valves strike together when forcibly closed.

The blood within the heart cavities may be free of bacteria while the diseased valves lodge large colonies, as in the case reported by Sidney Martin in the Gulstonian lectures recently delivered. (*Lancet*, April 9, 1892.) Yet in this case there were found infectious emboli in the cerebral and femoral arteries. Here the disease appeared in the left auricle, and the exciting organism was a staphylococcus growing in clusters and not in chains.

The relative frequency with which this form of endocarditis occurs in the right side is a matter worthy of consideration. The proportion occurring in Taylor's series practically corresponds with the findings of others, namely: eleven out of fifty-three cases.

Lion has made the suggestion that certain bacteria being aerobic, would grow best in the arterial blood of the left side, and that the anaerobic bacteria would flourish best in the carbonized blood of the right heart, and alludes to the frequency of right endocarditis in the fœtus.

However this may be, it will scarcely hold good of all instances, as for example the case reported by J. Jackson Clark at the meeting of the London Pathological Society, November 1, in which an excessively ulcerating and fungating inflammation limited to the right heart and lungs was found to depend upon a streptococcus.

In Martin's Gulstonian lectures above mentioned, he particularly showed that many of the changes and symptoms seen in malignant endocarditis were the result of certain albumoses found in the blood, and more particularly in the spleen. Chemically, these were indistinguishable from similar substances found in subjects of diphtheria and anthrax, although it was not so fatal in the same dose when injected into guinea pigs. It was found, however, to be a potent poison; it excited temperature, and in sufficient amount produced death.

Finally, after these reflections, the claim put forward that, clinically, cases of malignant endocarditis progress with very different symptoms, will not seem unreasonable.

Those who have observed even a few cases, must have remarked this fact. The physical signs may be of the most striking character or sink into insignificance, and the patient may succumb from the systemic poisoning without evidences of heart lesions or embolic disturbances.

The affection may pass for an acute pneumonia when the invasion is in the right heart and septic plugging of the pulmonary vessels follows; and, as is well known, the distant lesions seen in many cases may distract the attention of men of only ordinary carelessness from the actual seat and nature of the disease.

One often inquires, is the disease uniformly fatal? To my mind the answer must depend upon what one regards as malignant endocarditis. I saw a case succeeding a vulvar abscess, and accompanied by a septic inflammation of the neck and right hand, which went on to complete recovery.

Instances of puerperal endocarditis resulting in recovery are reported. Personally, I believe that cases recover, and that it is an error and a misnomer to apply the term simple endocarditis so unhesitatingly to all cases that have a favorable termination.

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# SOME CONSIDERATIONS BEARING ON THE TREATMENT OF PNEUMONIA.

Read before the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY W. H. WASHBURN, M.D.
MILWAUKEE, WIS

The conclusion seems forced upon us, by recent investigations as to the comparative mortality in cases of pneumonia, that the death rate from this disease is on the gradual increase, and has been on the increase since 1822.

When we eliminate all elements of uncertainty and unfairness in the comparative statistics of various hospitals and institutions, we are compelled to admit that if the death rate has not actually very materially increased, it has not been reduced by our modern methods of treatment. Those methods of treatment differ very markedly from those in vogue during the first sixty years of this century. The best authorities during that period insisted that in this disease blood letting was "a remedy of indispensable necessity," and they were almost equally unanimous in their use of cathartics, blisters, and occasionally emetics.

Subsequent to 1860 our treatment has been greatly modified, being less active and heroic, and styled expectant. This expectancy consists in doing little or nothing during the first stage of the disease unless the temperature ranges high and the cough becomes harassing, when antipyretics, such as large doses of quinine, veratrum viride, and later the newer antipyretics of the antipyrine order are given with opium to allay cough. Later in the course of the affection, when the heart begins to show evidences of failure, alcoholics have been chiefly relied upon, being strongly recommended in all the recent text books to which I have had access.

When we bear in mind these striking differences in method of treatment in connection with the fact that the death rate has increased, or at least has not decreased, under the newer system, which state of affairs can not be accounted for on the theory of change in the type of the disease, the conclusion seems forced upon us that there is something wrong somewhere.

A recognition of this fact has resulted in the production of a considerable volume of current literature bearing upon the subject of treatment. Those who have thus written, I think, may be divided into three classes: First, those advocating a return to the methods of our fathers. Second, those advocating the free use of such remedies as veratrum viride, aconite, tartar emetic, etc., in the early stages of the disease; and third, those advocating expectancy: that is, little or no treatment in the first stages, and alcoholics when evidences of cardiac weakness supervene, and perhaps cold externally for the reduction of excessively high temperature.

If we can believe the advocates of these different methods of treatment, pneumonia is the simplest of diseases to treat; the first two classes claiming to abort nearly all their cases in the first stage, and the third, to conduct nearly all their cases to a favorable issue. Nevertheless, the mortality rates are before us; in view of which, and our individual experience with the disease, we are compelled to accept these statements with a very large grain of salt.

As to venesection, it may be admitted that good may sometimes result in certain cases. The advocate of blood letting has this in his favor, that with the blood withdrawn there escapes a certain amount of toxalbumin; and I apprehend that the amelioration in the symptoms, which it is claimed often follows the operation, is due to this fact rather than to any relief which the right heart may receive by reason of a temporarily reduced total quantity of blood in the vessels; the modus operandi of venesection in this case being the same as in uræmic intoxication, where marked temporary relief often follows the operation, by reason of the coincident removal of uræmic poisons with the blood. On this supposition the fact would be explained that venesection is indicated, as its advocates claim, in all stages of the disease.

The veratrum viride treatment has always seemed to me to be unscientific and illogical from whatever point of view we regard it, and only capable of doing harm.

The immediate effect of increased body temperature is increase in rapidity of the pulse and respiration. This appears to be directly due to the action of the superheated blood upon the cardiac muscle and upon the respiratory nerve center. And this is the very thing necessary to increase heat dissipation and thus prevent a further rise in temperature. If, by means of such an agent as veratrum viride, we succeed in reducing the pulse rate to sixty or less per minute, it may well be doubted whether any good has been accomplished. On the contrary, in view of the impaired action of the heart, which we look for later in the course of the affection, the fact can never be lost sight of that drugs of this nature may add to the dangers under which the patient already suffers, and may be the determining lethal factor in what otherwise might be a favorable case.

We can never treat pneumonia truly scientifically until we are able to strike at the *materies morbi* of the disease, destroying the pneumococcus in the alveoli, or antidoting the pneumotoxin in the blood. This we are as yet unable to do, and hence our efforts will be palliative only.

We must abandon the idea that the peculiar cardiac weakness in this disease is due to obstruction of the pulmonary capillaries. The evidence all goes to show that such is not the case. Tying off part of a rabbit's lung produces no such effect upon the heart, and in pleurisy, with effusion, where the lung is compressed into the apex of the thoracic cavity, we do not find a heart so embarrassed as in cases of pneumonia. Again, we often see cases of pneumonia with extensive areas of lung involved, and with only comparatively mild systemic symptoms.

A case occurred in my practice last fall in a man forty-seven years of age, in which the lower lobes of both lungs were involved. The maximum temperature was 102.6 degrees, respiration rate 36, and pulse 108, the disease terminating by crisis on the seventh day. If cardiac embarrassment is due to pulmonary engorgement, then it should have been extreme in this case. The ordinary history of cases that terminate favorably is that when crisis occurs there is an immediate fall of temperature and change for the better in the character of the pulse, notwithstanding the fact that the condition of the lung remains for some time unchanged. The widely varying clinical history of this disease in cases where the same amount of lung substance is involved, must have convinced us all that we need pay but little attention to the lung itself, and that the gravity of the case depends more upon the accumulation of pneumotoxin in the blood than upon the local lesion.

All the vital processes are carried on by the agency of the nervous system, the great sympathetic presiding over all the so-called involuntary or vegetative functions. As long as these functions are maintained, so long will life continue. We recognize the vis medicatrix naturæ, and this force it is which calls forth those internal responses to external impressions which alone render life possible. When the germs of disease or their products gain an introduction into the human body, if there is not a counteracting internal action set up, then the patient dies. And when we come to study the effects of these germs or their products upon the individual, we find that they gradually reduce or almost abolish nervous sensibility, and that then the vital processes are at their lowest ebb, and if we are unable to reawaken nervous sensibility, death is inevitable. We see this condition of obtunded nervous sensibility very markedly in typhoid fever and pneumonia. In pneumonia the heart becomes very much weakened, and its action inefficient; not from any impairment in its muscular substance, but from impaired innervation, nervous sensibility being diminished by the toxic effects of poisons generated in the system and imperfectly eliminated, and probably in a higher degree by the poison peculiar to the disease—the so-called pneumotoxin.

The objects, then, to be accomplished are the increase of nervous sensibility and the elimination of the specific poisons of the disease and the products of retrograde metamorphosis. We have seen that the treatment almost universally recommended under these conditions of obtunded nervous sensibility has been alcoholics, freely and often administered, in order to stimulate the nervous system to renewed activity.

Alcohol has always enjoyed the reputation of being a stimulant, but I am firmly convinced that such is not the case, and fully believe that this view of the question will ultimately prevail. Symptoms of this are becoming more and more numerous every year. The most commonly observed effects of alcohol are all sedative. Samuel Wilks enumerates these effects at some length: the dilated capillaries from vaso-motor paralysis, the semi-stupor sought by those who "drown their sorrows in the flowing bowl," the forgetfulness of evil done or wrongs sustained, the insensibility to cold and other unpleasant external impressions.

Cosgrove, reviewing the experimental work done by Ridge, Lauder, Brunton, Parkes, B. W. Richardson, W. A. Hammond, Prout, Fife, Vierordt, Smith, Perrin, Lehman and others, says that, contrary to what has been and is supposed, they found that small doses of alcohol produce from the first a narcotic rather than a stimulant effect. That all these observers, with the exception of Smith, also found that alcohol in small doses diminished the amount of carbon dioxide exhaled.

H. C. Wood, before the International Medical Congress in 1890, said that his doubts as to the stimulating effects of alcohol on the heart during anæsthesia had grown stronger and stronger for the past ten years, and that his own experiments showed that alcohol does not increase the size of the pulse or arterial pressure, but rather appears to increase the rapidity of the fall of arterial pressure, and thus hastens death.

N. S. Davis summarizes the physiologic effects of alcohol as determined by very many and elaborate experiments by many experimenters, including himself, as follows:

In doses of any size, from the least to the greatest, it is an anæsthetic, lessening nervous sensibility to all external impressions—heat, cold, weariness, despondency, weakness, pain; it also diminishes the oxygen carrying power of the red blood cells, thus materially interfering with the processes of Katabolism, thus impeding nature rather than aiding her in the elimination, not only of the ordinary products of retrograde metamorphosis, but also of those foreign disturbing elements which constitute the poisons of disease.

Experiments with alcohol on digestion are no more favorable to its use in cases of pneumonia than those already mentioned: Blumeneau says that as a result of a long series of experiments with alcohol on digestion, he has proven that the functional activity of the gastric juice, its general acidity as well as amount of hydrochloric acid present and its corresponding digestive powers are diminished, and that this diminution of power is relatively greater in persons not accustomed to the use of the drug; also that the motor power of the stomach and its capacity for absorption are diminished in direct proportion to the strength of the alcoholic solution.

If these conclusions as to the physiologic action of alcohol are warranted by the facts, and I do not see how they can be doubted, we are justified in the conclusion that its use in cases of pneumonia is illogical; that it is utterly incapable of doing good; and that it is largely responsible for the high mortality rates in this disease.

We ought therefore to abandon the use of alcoholics in the condition in question, and extend our observations in other directions, in order to ascertain whether we are in possession of a therapeutic agent from whose physiologic action we have any reason to expect aid in the accomplishment of the objects to be attained, namely, the increase of nervous sensibility and the elimination of the specific poison of the disease and the products of retrograde metamorphosis. I think we have such an agent in strychnia.

There appears to be no difference of opinion as to the action of this drug. By its administration the sensibility of the nervous system is heightened in every part, not only the cerebro-spinal system but also the sympathetic. It acts as a stimulant on the respiratory nerve center, upon the cardiac ganglia, and increases the sensibility of the nerves of special sense, touch, sight, hearing, and also increases the activity of the olfactory sense. Its stimulant action on the involuntary muscular system is witnessed in its increase of intestinal peristalsis and in increased force of uterine contractions when the drug is administered in the progress of parturition. It increases the mechanical movements of the stomach as well as the amount and acidity of the gastric juice, thus assisting the process of digestion, and at the same time there is an increased action of the kidneys, witnessed by an increase in the quantity of urine eliminated.

We have, then, in strychnia, a drug which in its action is diametrically opposed to alcohol and one which is above all others, by reason of its physiologic action, indicated in the treatment of pneumonia at the stage which we are considering, but which, so far as I am able to judge from text books and current literature, has as yet received but little recognition; and it is the purpose of this paper to urge the abandonment of alcohol as a stimulant in this disease and offer strychnia as one substitute therefore.

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## TO BLEED OR NOT TO BLEED IN PNEUMONIA?

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

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Fifty years ago when pneumonia was recognized as a pure and simple local inflammation of the lungs this question would have been answered in the affirmative, and no reputable physician would dare raise his voice against it. But in this, the last decade of the nineteenth century, the physician that resorts to bleeding in pneumonia offers an apology for so doing. Our modern views of pneumonia have undergone a radical change during the past few decades. The histological structure and the phynelogical function of the lungs are better understood than they were fifty years ago. Our knowledge of the pathological anatomy and the pathological functions of the lungs have undergone wonderful changes during that time. The bacteriologist with his cultures, his microscopic and micrörgans the chemist with his reagents, his test tubes and ptomaines have greatly changed our opinions in regard to the causes and progress of pneumonia, and with these advances and changes must of necessity come modern and improved methods in treatment. The physician that still consults his old books upon pneumonia for the purpose of gaining a knowledge of this disease and its treatment, might with as much profit consult the laws of the Medes and Persians or the blue laws of Connecticut as to his knowledge and duty under our present civil laws.

With our modern knowledge of the causation, pathology and treatment of pneumonia, we ask the question, "To bleed or not to bleed in pneumonia?"

What do we learn by examination of statistics? The advocate of blood letting in pneumonia compiled from the statistics of the last fifty years and arrived at the conclusion that the mortality of pneumonia has gradually increased as blood letting has diminished. While the opponents of blood letting take the same statistics and by their compilation of them prove as conclusively that the mortality of pneumonia had decreased in proportion to the decrease in blood letting.

This shows us how unreliable statistics are in the hands of those that wish to pervert them. The circumstances and conditions under which the statistics are gathered must all be taken into account and carefully studied before they can be of use to us. I might take up this entire paper quoting statistics and I would arrive at the following conclusions: That the statistics of the mortality from the advocates of blood letting prove that pneumonia has increased from 6¼ per cent. to 31 per cent. during the past fifty years. The statistics of the opponents to blood letting prove that the decrease of mortality from pneumonia has been from 40 to 4 per cent. in the past fifty years.

Dr. G. M. Smith says that, "Any one at all familiar with metropolitan hospital affairs, distinctly understands that hospital statistics can not always be quoted as exemplifying the results of treatment unless the cases are classified. Many cases of sickness and injury are brought to a hospital in a moribund condition; treatment can scarcely be initiated, and so far as the institution is concerned, they are really coroner's cases. The modern hospital ambulance system, which is such a blessing to humanity, is doubtless often employed to foist into an infirmary dying cases. Many without friends in lodgings, or among heartless friends or relatives, are shuffled to an institution to die while in their last moments."

A much larger proportion of bad cases of pneumonia are sent to the hospitals now than fifty years ago. The risk of removing such cases is attended with great danger. A case of pneumonia is not certainly benefited by removing it from a warm bed to a cold ambulance and then the exposure incident to a long ride does not add to his chances of recovery and the case dies and is reported as one showing the increased per cent. of mortality from pneumonia where blood letting is not resorted to. We all know that pneumonia is more fatal in some localities than in others, and that in the same locality the mortality is greater some years than in other years, and that the per cent. of fatal cases vary much in different seasons of the year.

The *apparent* large per cent. of deaths from pneumonia in private practice can be accounted for in several ways. A large number of infants and children's deaths are now reported as from pneumonia, which at one time were reported under some other name. Secondary lung complications are now usually reported as pneumonia, and then the reports of death are more complete than they were fifty years ago. When I was a boy a great many cases died of *old age*. Who ever hears of a death certificate made out with the cause of death as "*old age?*" All of these cases are now reported as pneumonia, most of these in old persons not being true pneumonia but hypostatic congestion. All of these causes and cases are reported as deaths from pneumonia and it swells the per cent. of fatal cases of pneumonia when blood letting is not resorted to.

Twenty-five years ago when I graduated, the idea that a certain class of cases of pneumonia would die if I did not bleed them, was thoroughly impressed upon my mind. They were so vividly described that I could tell them at the first glance. That the death of these cases should not be laid at my door, the first instrument I bought was this lance (showing a lance) with the determination to use it *well* and to use it *often*. I carried it with me every day for twenty years, expecting to find a suitable case of pneumonia in which to use it. The case requiring bleeding never came to me. It has never been used to bleed a case of pneumonia, and for the past four years it has done good service in a manicure set. In my twenty-five years of practice I have never found a case of pneumonia in which I thought bleeding would be beneficial, and I have *never regretted* not having bled a case.

What are the physiological effects of blood letting, and what results do we expect to obtain from it in pneumonia? Huxham, Cullen, Sydenham, and others of the old sanguineous school took large quantities of blood from cases of pneumonia. Day by day, with the progress of the disease, fresh blood letting was practiced. Dr. Gregory after bleeding a young man into convulsions by the abstraction of between four and five pounds of blood in three days, concluded that he had cured him. Bouilland recommended a daily bleeding to the amount of fourteen to sixteen ounces until the disease is cured (or dead.) Andral asserts that "no period of the disease contra indicates venesection and that age is no barrier to this treatment, the slightest threatening of a relapse calling for further bleeding; it is not to be omitted without the greatest danger, no amount of prostration to prevent it, if the respiration be seriously impeded." Grisolle recommend the abstraction of from two to four pounds by repeated venesections, and still regards this plan as the most successful in the treatment of the disease. Within a few years Professor Hardy has bled patients with pneumonia three times in twenty-four hours. Within the past few years several efforts have been made to revive this so-called

"Lost Art." It is not only recommended by some of the older medical men who graduated during the period of bleeding, but some of the younger members of the profession, who have failed so far to make progress forward, start on a backward track and attempt to resurrect some old idea treatment or operation that the progressive portion of the profession have discarded long ago.

The late Prof. George B. Wood in his work on "Therapeutics and Pharmacology," in speaking of blood-letting says: "There is no remedy more important than this; perhaps none which so frequently saves life. The indications which bleeding is calculated to fulfill, are, first: to lessen the quantity of the blood when in excess. Second: to lower its quality when abnormally rich or stimulant. Third: to relieve vascular irritation and inflammation through the two agencies just mentioned. Fourth: to obviate local determination of blood dependent on excessive action of the heart. Fifth: to relax spasm and relieve nervous irritation in general by directly depleting the nervous centers. Sixth: to awaken the susceptibility in any organ rendered insensible by active congestion of the nervous centers, and seventh: to promote absorption by depleting from the blood vessels." In another place he says: "The effects of bleeding are to lessen the quantity of blood for a time, and to impair its quality. After the loss of blood, absorption of liquid takes place immediately in order to supply the deficiency, so that the blood vessels are soon as full as they were previously to the bleeding. Therefore, though the immediate effect of bleeding is to diminish the mass of the blood, the loss in this respect is soon repaired, and the permanent effect is a depreciation of the quality of that fluid, which is rendered more watery, and less able to supply influence and nutriment to the systemic functions." Again he says: "The immediate phenomena attending on the loss of blood are a diminution in the fullness and force of the pulse, paleness of the surface, and reduction of the temperature of the body. As the loss proceeds, the pulse becomes more and more feeble, till it can scarcely be felt; the lips, face and general surface become increasingly pale, and the skin cool; feelings of languor, nausea, muscular weakness, giddiness, mental confusion and faintness come on, and at the last syncope takes place, with a temporary suspension of all the obvious vital processes, from which the patient gradually recovers."

I have quoted so extremely from Prof. Wood because he was a conservative type of the old school. Do we find in his picture of the physiological effects of blood letting a remedy of great value in the treatment of pneumonia, viewed through modern pathology?

Pneumonia is an infectious disease produced by the presence of the diplococcus pneumoniæ. Whether we call it primarily a local disease of the lungs followed by constitutional symptoms, or whether we consider it a general disease with local manifestations in the lungs makes but little difference. What concerns us is, what are the conditions that we have to deal with and what produces them, and how can we best relieve them?

In a paper I read before the Section of Practice of the American Medical Association in 1888, on some of the "Influences of the Sympathetic Nervous System in Disease," I took the ground that most of the so-called inflammatory and catarrhal diseases could be more thoroughly understood by considering them as conditions dependent upon paresis of the sympathetic nervous system. I said in this paper that: "Pneumonia can be more easily explained in this way than in any other." I will not take up your time with the pathological anatomy of the lungs or blood in pneumonia. The conditions that are spoken of, that of engorgement, red hepatization and gray hepatization are only the conditions that we find where the efferent nerve filaments of the sympathetic ganglia have been severed, or held in temporary suspension,—the rapid pulse, elevated temperature, difficult breathing, weak heart, etc., are the effects of paresis of the vaso-motor system, as has been demonstrated by the experiments of Pettit, Dupuy, Barnard, Bidder, Brown-Sequard, Samuel Fox, Flint and others.

The diplococcus pneumoniæ find lodgment in the lungs; by their local action they produce an irritation and by the action of the ptomaines produced by them which enter the circulation and act upon the ganglionic nerve centers produce every condition and symptom we find in pneumonia. The action upon the nerve centers in connection with the local irritation of the microörganism cause the engagement of the lungs and, following this, we have the stages of red and gray hepatization. With the loss of tone of the vaso-motor contractors the vessels become dilated and press upon the air cells cutting off the supply of air and with it the oxygen, producing dyspnœa; at first the current of blood passes more rapidly than normal, but after several hours the current becomes slower and slower. The right heart using all its force to propel the blood through the lungs at last becomes exhausted. The left heart not receiving sufficient blood from the lungs becomes rapid and irregular in its action.

Heart failure and exhaustion being generally the causes of death in pneumonia, every effort should be made to preserve the strength and not waste it by blood letting.

If we carefully consider the physiological effects of blood letting referred to in this paper, and then study the conditions and symptoms and their causes in pneumonia, what valid reason can we give for the removal of blood? If the point is raised that it gives relief in the stage of engorgement by reducing the volume of blood passing through the lungs, would it not be much better to preserve the blood in the body and regulate the amount passing through the lungs by ligating the extremities, or by means of well known therapeutic remedies, and then we have the full amount of blood to husband the strength of our patient after the urgent symptoms have passed off. When we consider, therefore, that the most urgent symptoms of the disease, the dyspnœa and the pyrexia are only temporarily diminished by blood letting and that they both tend in most cases to return after a few hours, the reasons for the adoption of this method of relief lose much of their force.

The mortality from pneumonia depends much more on prostration in the later period than on asphyxia in the earlier stages of the disease and the prostration is much more likely to occur when the strength of the patient is weakened by bleeding. Wilson Fox in speaking of blood letting in pneumonia says: "With regard to the possible effect of this treatment in cutting short the disease, it may be stated that the chances in any given case are strongly against such a result. Looking at the general effects of this procedure, patients will on the whole be probably in a worse condition for passing through the latter stages of the disease when weakened by an artificial loss of blood than they are likely to be if their resources in this respect are husbanded."

Dr. Whittaker says: "There could be no justification of venesection in pneumonia, except upon the theory of a local inflammation. That pneumonia is, however, not a simple inflammation, is proven by well established facts. Pneumonia is due to a poison entering the blood and affecting the whole body, and no amount of blood letting could let it out, any more than we can drain out the impurities of a stream with a bucket."

After twenty-five years spent in the careful study and treatment of pneumonia, I do not think I would be any more justifiable in bleeding a patient with pneumonia than I would in picking the pocket of a millionaire because he had more money than required.

If I believed that blood letting would decrease the mortality from pneumonia, I would bleed my patients, even if the entire medical profession should condemn it.

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# EARLY ASPIRATIONS IN ACUTE PLEURITIS.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

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Pleuritis is a disease as old as medicine and common as spring and autumn, but as many mistakes, perhaps, have been made in the diagnosis and treatment of it as have been made in the more obscure and less common diseases.

In the present light of medical science, blunders or neglect are inexcusable in treatment or operation in any branch of medicine.

The authorities teach that this disease will run its course often with little or no treatment, and is easy of diagnosis. So one may say of scarlet fever, sometimes. But any disease, common, obscure or rare, which will vitiate or interfere with the issuing of a life insurance policy, may not be considered slightingly, or treatment assumed without duly considering the gravity of the case, with the many stages, types, complications and dangers.

In the cities of the Atlantic seacoast, especially New York and Brooklyn, pleuritis becomes one of a series of our deadly diseases, especially when pneumonitis plays the final rôle.

The above teaching tends to mislead when the sudden attack, the rapid course, the intense suffering and final dissolution scatters to the wind the set rules of the books, the best therapeutics and the skill of the most experienced.

The business man in whom the habit of concentration becomes so fixed that a small amount of pain does not alarm so long as the brain keeps clear and the hand steady, sinks at the threshold of his own door or in his office, and in spite of consultants, specialists and trained nurses succumbs in three to fifteen days. If the victim be a frail woman who has always known pain somewhere, dyspnœa and acute pain set in at once, and with a scared look indicative of the approaching dissolution, she loses heart, so to speak, and in the home her place becomes empty, while the family physician, who becomes so attached to his patients that their home hopes and home joys are his, sits dumb with defeat. Autopsies are seldom asked for and rarely allowed, hence medical knowledge grows slowly and only by years with the general practitioner not attached to a clinic or hospital.

In this short paper or in a longer one, it would be beyond forbearance to dwell upon the causes and types, the many views of treatment, the discarding of many of the old and acceptance of some new remedies, the manner of administering them, the weary convalescence and crippling adhesions—for well I know I am speaking before the gods after being present at the battle of the giants this morning—all these have been told well by the latest authorities, and their sanction given to the changes.

Every practitioner has his happy combination of a large repertoire of drugs and his favorite prescription, also his studied mode of action. But routine practice can not be tolerated.

The advantages of the new therapeutics—the aniline carbon group—must be admitted, of which phenacetine takes foremost rank. Yet Loomis still holds, with most Americans, "that the only controlling power over acute pleuritis is opium." There still remains to us, however, of the old system of therapy, calomel, opium, veratrum viride, aconite and digitalis, the integrity of which can not be impeached. The counter-irritations and even poultices have followed the fate of the untrained nurse. Yet how much comfort these have given to the sufferer when properly applied, or before the arrival of the physician.

It does not take many cases of pleuritis to convince the practitioner that a diagnosis is not always an easy matter. Complication with pneumonitis, abscesses of adjacent organs and intestinal engorgement direct the attention away from the seat of disease till suppuration renders the case hopeless, ending in acute tuberculosis if there be predisposition.

The reader once held a diagnosis in abeyance for eighteen hours in favor of appendicitis where intestinal engorgement complicated an operative case of pleuritis. To auscultate and make out the different sounds which are taught by the specialists as indicative of this or that condition; to hear the pleuritic râles of a Leaming, whose acute hearing could discern vesicular breathing after death, the cause of which he attributed to changes taking place in the pleural walls; in palpation to distinguish the musical tone and pitch of a Quimby upheld by Damrosch, or to have had the clinical training of a Loomis, whose eagle glance can descry the prey afar off, only a few can hope to aspire. By the way, this fine sensibility might develop in some medical westerner who is accustomed to hear the grass grow, according to a facetious editorial. But it must not be ignored that the beginning of a successful ending in treatment of any kind, however tedious, is in a careful mapping out of the involved parts by "palpation and auscultation during inspiration and expiration," as lain down in the books and taught in the clinics, noting the type, duration, history and complication.

It will not be surprising that a treatment which will cut short the tedious and dangerous methods of the past should be welcomed in the cure of this disease. The majority of the profession now accept early aspiration as this remedy, and that it belongs to the realm of general practice and not to be delegated to the field of surgery.

Since Trousseau taught that there was more than palliation in the method, time has proven it. From Trousseau to Lister we owe progress in the past to all the brilliant minds who have helped to perfect the methods, instruments and the applications of these, by which aspiration is now applied as a remedy in the cure of acute pleuritis.

Dr. Matas' indications when to operate are clear and explicit: "1, the abundance of the effusion; 2, the rebelliousness of the effusion to absorption in spite of appropriate medication." Again we quote his reasons for immediate operation:

"Excessive effusion, asphyxia, cyanosis, large accumulations, displacing the heart, interfering with thoracic circulation, which may cause instant death." His rule is that "when fluid can be detected on a level with the second rib, operation is indicated."

After a clear diagnosis has been made out and the fever and pain controlled, the preparation for aspiration is simple to one accustomed to minor surgery, but must be thorough, also the careful selection of a proper instrument, and there are thirty or more to choose from. It must have the guarded point, must be easily cleaned and comfortably carried about with one. It must be thoroughly cleaned, and we here give Dawbarn's method of sterilizing:

"Boil the trocar and canula separately for twenty minutes in a solution of one drachm of sodium bicarbonate to a pint of water, then after drying keep them permanently immersed in a sterilized bottle filled with absolute alcohol." Other methods of sterilization may be employed, only one is to remember to guard against microörganisms.

The patient is to be prepared by thoroughly cleaning the parts with carbolic acid solutions (surgical solution), or wipe off with ether and absorbent cotton if the skin is not broken.

"There is no classical point for operation," says Matas. "Select a point near the fluid; be sure of the anatomy when the patient is in a semi-recumbent position. Avoid the point of the shoulder blade so as not to give the patient discomfort afterward in moving in bed, especially with nervous children. Keep the canula clear if it become stopped with mucus. Evacuate the fluid slowly and sustain the patient by hypodermic injection of stimulants. The reader has had the temperature fall from 104° to 90.3° in three hours after taking ten ounces of fluid."

The pleural cavity may refill, but a second evacuation is seldom required. The patient is not yet cured. Great care must be taken to expand the contracted lung and restore the displaced heart to its proper place by gymnastic exercises; local massage to correct the deformity of the chest. Open air exercise, proper food and tonics must be ordered. In suppurative cases the opening of the thorax must be resorted to, with drainage and washing out with antiseptic mixtures. With asepsis, care and medications to produce sleep, if death ensue it must be from bad methods or unforeseen complications. Chloroform may be given with good results, especially to nervous children; cocaine also may be used with advantage As in any other surgical operation, unnecessary pain is to be avoided.

The lesson of the hour to the general practitioner in the treatment of this seemingly simple disease, teaches that the field of practice is being shadowed in its usefulness by consigning aspiration to the surgeon.

The general practitioner must be an all round physician, not a specialist. He must think anatomically as well as physiologically. He must diagnose correctly and do all his minor surgery himself in order to keep the respect of his patient, and only in the capital operation should he surrender his patient to the specialist. And even then he should be able to so correctly locate disease that he may command the surgeon rather than retire.

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# DEMONSTRATION OF GASTRODIAPHANY.

Read before the Section of Practice of Medicine at the Forty-fourth Annual Meeting of the American Medical Association.

BY MAX EINHORN, M. D.

PHYSICIAN TO THE GERMAN DISPENSARY AND INSTRUCTOR IN CLINICAL MEDICINE AT THE N. Y. POST GRADUATE MEDICAL SCHOOL.

Although our means of diagnosis in diseases of the stomach are quite manifold, and have of late been increased (chemical analysis of stomach contents; inflation of the stomach with gas; the splashing sound), nevertheless I do not hesitate in bringing in a new method of examination before your learned body, as I am convinced it will prove of value. In no other region of the body does there exist at times so many difficulties for making an exact diagnosis as in the abdominal cavity. Here so many important organs are crowded together, and though in the normal state they are friendly neighbors and hold their own places, it is quite different in sickness. This often necessitates changes in the size and position, and thus the normal limits are obliterated, and at times hardly recognizable. This has special reference to the stomach, which is the most frequently afflicted organ in the abdomen. All means tending to give us a clear idea of the position and size of the stomach must be appreciated. Gastrodiaphany or transillumination of the stomach serves best this purpose, and after a few short remarks I shall demonstrate to you the method.

With a light inside, the stomach forms a kind of lantern, which is recognizable through the translucent tissues. As small streaks of light are more perceptible in the dark, it is best to illuminate the stomach in a dark room.

For examination, I make use of a very simple apparatus. It consists of a soft rubber tube, at the end of which is fastened an Edison lamp (of hard glass) by means of a small metal mounting; from here conducting wires run to the battery; at some distance from the rubber tube there is a current interrupter. The insertion of this apparatus into the stomach is no more difficult than that of the ordinary tube alone. I usually have the patient in a fasting condition, drink one to two glasses of water, and thereupon insert the apparatus, lubricated with glycerine.

In 1889 I had first described this method of examining the stomach and designated it "gastrodiaphany" for the stomach becomes translucent, and called the apparatus serving this purpose the "gastrodiaphane."

It is best to examine the patient either in a standing or a recumbent posture. The stomach presents itself as an illuminated zone of a reddish hue on the abdominal walls; its contours can be discerned more accurately by pressing with the hand on the abdomen in the neighborhood of the transillumination figure, or, speaking more correctly, by counter-pressing the stomach. By means of this manipulation the point in question is brought nearer to the source of light, in case the stomach is situated beneath it. Normally the transillumination zone of the stomach is found in every individual. It is of interest to observe that the stomach moves farther down during a forced inspiration, *i.e.* the trans-illumination zone is seen to descend. During a strong contraction of the stomach the transillumination figure becomes considerably smaller. This can be frequently observed as soon as the patient tries to vomit during the examination. If the stomach is considerably dilated, one can see by means of the gastrodiaphane on the abdominal walls of the patient an intensely lucid lower zone, which is situated between the navel and the symphysis and goes over into a less intensely clear zone which sometimes borders the left margin of the ribs. The transillumination figure corresponds with both that part of the stomach which is filled with water and that which is filled with air.

In contra distinction to dilatation of the stomach, the cases of gastroptosis (low position of the stomach, show a relatively small trans-illumination zone, which is situated far below and extends from about the symphysis to the navel.

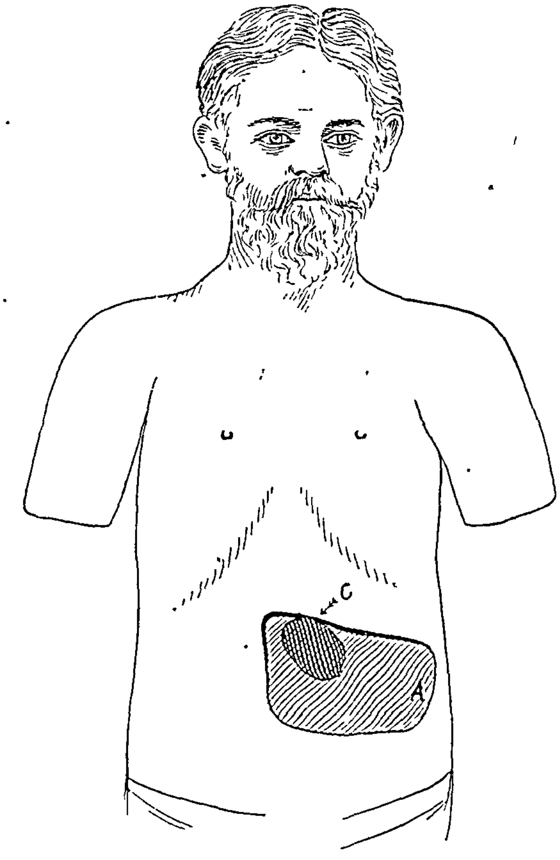
In the past four years I have often made use of gastrodiaphany as a diagnostic means. In my paper "On Gastrodiaphany" *Medical Journal*, December 3, 1892, I have pointed out the value of gastrodiaphany in the following:

1. We are enabled to recognize quickly a dilatation of the stomach.
2. The condition called "gastroptosis" can with certainty be pointed out.
3. One is enabled to perceive tumors or thickenings of the front wall of the stomach by their lack of translucency.

In that paper I described a case of cancer of the front wall of the stomach, where the transillumination of the stomach was not apparent, *i. e.*, the field of translucency of the stomach was entirely absent. This negative result of gastrodiaphany proved to be important for the diagnosis of the case in question, as the orifices of the stomach (cardia and pylorus) had not been affected.

To-night I would like to report to you the result of gastrodiaphany in a patient with carcinoma pylori, whom I had the opportunity to examine several times. There the tumor could be very well felt; there was stagnation of food in the stomach for several days; no free HCL; organic acids present. The diagnosis was carcinoma pylori. The picture of diaphany showed a large illuminated zone going from the left margin of the ribs downward (⅔ finger width below the navel) and horizontally to the right about 1½ inches beyond the linea alba. The upper part of the transilluminated zone was dark or shadowy just in the region of the linea alba stretching to both sides of it having a horizontal diameter of 3 inches and a vertical of 2½. This shadowy figure was embedded in the transilluminated zone and the reddish hue could be perceived almost around (⅚ of the circumference) it. The drawing represents schematically the transilluminated stomach with the figure in it. (See figure.) Although in this case the tumor could be felt and the diagnosis was made without the aid of the gastrodiaphane, nevertheless, the result of the diaphany examination was very interesting and instructive.

Mr. President and gentlemen, gastrodiaphany in man as first practiced by me has found its way to Russia, Germany and France (Reichmann, Heryng, Pariser, Boas, Renvers, Doumer) and in this country others (D. D. Stewart and M. Solis Cohen) besides myself, practice it. Let me hope that after this demonstration the use of gastrodiaphany will be more promulgated and that it will be of continued value to the profession.



*a*—Trans-illumination zone of the stomach.
*c*—Tumor.

IMMIGRATION INTO BRAZIL.—The Brazilian Congress recently repealed the laws prohibiting Chinese and Japanese immigration. There is great demand for labor supply among the farmers. All immigration into Brazil is now through a company who have a contract with the government to introduce not less than 20,000, or more than 100,000 immigrants per year.

Among other conditions, it is specified that 90 per cent. must be families of agriculturalists; they must be of different nationalities, not more than 60 per cent. coming from the same country. Ages are specified and all must be strong and apt at their profession. Paupers and criminal classes will not be received. When accepted, immigrants are housed and fed until the government transports them to their places of destination in the interior. The government will send back to their native country, those who become widows or orphans or incapacitated by accidental injury during the first year.

# THE MUTUAL INTEREST OF THE MEDICAL PROFESSION AND INSURANCE COMPANIES IN THE PROLONGATION OF LIFE.

Read before the Section of Medicine at the Forty-fourth Annual Meeting of the American Medical Association, held in Milwaukee, Wis., June, 1893.

BY CHARLES DENISON, A.M., M.D.

DENVER, COLORADO.

Professor of Diseases of the Chest and of Climatology, University of Denver; Ex-President of the American Climatological Association; Author of "The Rocky Mountain Health Resorts," "The Annual and Seasonal Climatic Charts of the United States;" etc.

This is a new inquiry, seeking to bring into better harmony and successful coöperation two great institutions, *i. e.*, scientific medicine and life insurance business. Those satisfied with what is already the rule will oppose with the argument, *cui bono?* the two callings are wholly distinct and entirely sufficient as they are. The argument is both fallacious and deceptive, besides being useless.

We, the medical profession, are not and do not pretend to be perfect. We are simply on the road to perfection, constantly passing many things by the way with regretted and unregretted, if unknown, ignorance of their real nature.

If Lawson Tait had any reason to make the statement attributed to him, that "that man would be rash who would make a positive diagnosis of any given condition within the abdominal cavity," then certainly every physician must appreciate the equal necessity of the largest possible array of evidence of disease within the thorax in order to reach any positive conclusion. Time is evidence, and memory is unreliable, hence the great need of the systematic recording of the evidence in chronic cases. A complete diagnosis may be so difficult that it requires to be something more than "physical," and the physician needs all his own intuition, historical information and side aids, as the microscope, to come to a definite conclusion.

We know so very little of the *pretubercular stage* for instance, that indefinite. indefinable condition of the body solids or fluids, before the *bacillus of tubercle* "lives, moves and has its being."

And as to life insurance, it can not boast of any greater completeness than the medical profession, unless on the understanding that insurance is nothing more than taking chances on those who will die in favor of those who survive. Life insurance had practically no existence previous to 200 years ago, when Pascal, a Jesuit priest, being appealed to to divide the stakes in a game of chance, in doing so figured out the "doctrine of probabilities," which has ever since been the basis of the life insurance business. But, *as an institution interested in life*, insurance is far from the attainment of its highest success. To appreciate the truth of this statement one has only to carefully peruse the diverse views as to "Modern Insurance and its Possibilities," in the March number of the *North American Review*, by prominent and distinguished presidents of American life companies. What a splendid conception of the "*possibilities*" of life insurance these excellent gentlemen would have had if they could have seen, *in their mind's eyes*, the harmonious picture of the coming life insurance president aiding and abetting the physician of the future in *the prevention of disease and the prolongation of life!* Strange as it may seem, in view of such well rewarded business sagacity, as these correspondents of the *North American Review*, enjoy, it does not appear to have occurred to them to inquire how much it would have cost to stamp out a disease in preference to paying a bonus for those this given disease had slaughtered. Judging by the "possibilities" mentioned, the important question has not yet been entertained, namely, how 10 per cent. of health precaution and skillful, systematic and professional supervision of their risks might result in 30 to 60 per cent. pecuniary gain to the companies.

However, admitting that the life insurance company has thus far been an institution founded on money considerations only, we will at first strive to keep in the background the splendid humanitarian idea which underlies this present conception of its future possibilities. Then, when a broader and nobler course for the companies has been shown, not only to be comparatively inexpensive but very profitable considering the outlay, the beneficent purpose of prolonging life, the idea of benefits while living for the insured, as well as for his survivors after death, may be a substantial support to the more enlightened plan for life insurance's usefulness. Let it be distinctly understood that this is not a plea for the insurance of *invalid* risks. However, the time may come when the better understanding of the classification and varying longevities of invalids may lead to a knowledge of their insurability. No, it is the care and improvement of the risks the companies have already taken which are prominent objects of this paper.

There is undoubtedly a considerable mortality rate, which, because of deaths by accident or acute diseases, is diverted from the ratio that would otherwise belong to the consumptive class. Besides medical officers are making particular efforts to shut out this one disease by skillful selection, and by the exclusion of heredity. Notwithstanding these influences there are deaths enough among the insured from tuberculosis alone, to warrant the reform hereafter suggested in this paper. If the other companies were as painstaking in the compilation of their mortuary statistics as the Mutual Life of New York has been, they too would learn something directly to the point and greatly to their benefit.

Namely, 1st: That, as to consumption, as early as the third year of insurance the companies have practically lost most of the advantage of their selection of risks. 2nd. That from the second to the tenth year of insurance the mortality they have to pay for averages 23 per cent. due to some form of tubercular disease. This is a fair inference from the following table, kindly furnished me by the medical department of the Mutual Life, taken from the mortuary records of the company for its first thirty years of of experience:

TABLE XV.—*Proportion of Consumptive Mortality to Total Mortality and to Years of Life Exposed.*

| Duration of Insurance. | Deaths from Consumption. | Percentage on Total Mortality. | No. of Deaths to 10,000 Years of Life Exposed. |
|---|---|---|---|
| 1st year. . . . . | 57 | 10.67 | 7 |
| 2d " . . . . | 117 | 20 07 | 17 |
| 3d " . . . . | 133 | 24.19 | 21 |
| 4th " . . . . | 143 | 25.49 | 25 |
| 5th " . . . . | 116 | 23.73 | 24 |
| 6th to 10th year.. | 298 | 22.70 | 28 |
| Above 10 years. . | 168 | 14.33 | 23 |

The above are not strained estimates, but probably underestimates for all companies; for that the Mutual Life is a carefully managed company in its medical department is either plainly shown by the following table, obtained from the same source, or else the more numerous consumptives among the beer drinking Germans hang on to life much longer, than the consumptives in our healthier yet faster-living America:

TABLE VIII.—*Showing the Annual Number of Deaths from Consumption Among 10,000 Insured at Each Quinquennial Period of Life.*

PROPORTION OF DEATHS FROM CONSUMPTION TO EVERY 10,000 INSURED.

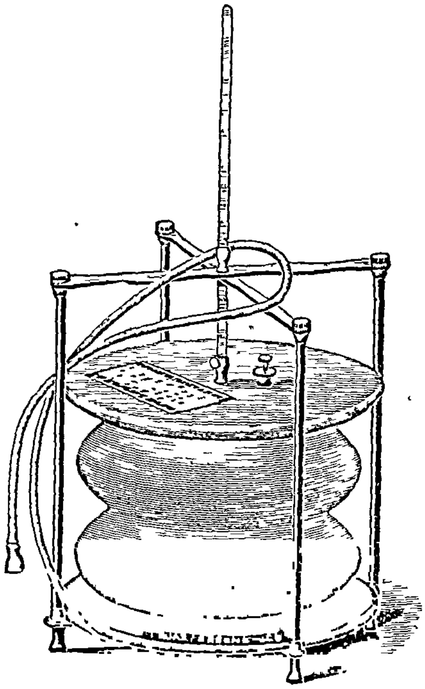
| Age. | Mutual Life Insurance Co. | 12 German Life Insurance Co's. |
|---|---|---|
| 21 to 25 years . . . . . . . . . . . . . . | 23 | 19 |
| 26 to 30 " . . . . . . . . . . . . . . | 23 | 39 |
| 31 to 35 " . . . . . . . . . . . . . . | 22 | 42 |
| 36 to 40 " . . . . . . . . . . . . . . | 17 | 37 |
| 41 to 45 " . . . . . . . . . . . . . . | 17 | 30 |
| 46 to 50 " . . . . . . . . . . . . . . | 16 | 38 |
| 51 to 55 " . . . . . . . . . . . . . . | 15 | 35 |
| 56 to 60 " . . . . . . . . . . . . . . | 16 | 32 |
| 61 and upwards . . . . . . . . . . . . | 18 | 32 |
| All ages . . . . . . . . . . . . . . | 18.6 | 35.7 |

Note.—It should be borne in mind that the above table is influenced by the younger life which obtains in a company's experience during the first 30 years of its existence.

What is needed is a similar computation up to date of the mortality experience of all the companies, not only like the above two tables, but also another giving *the ratio of deaths in this class to all deaths for each year's age of policy.*

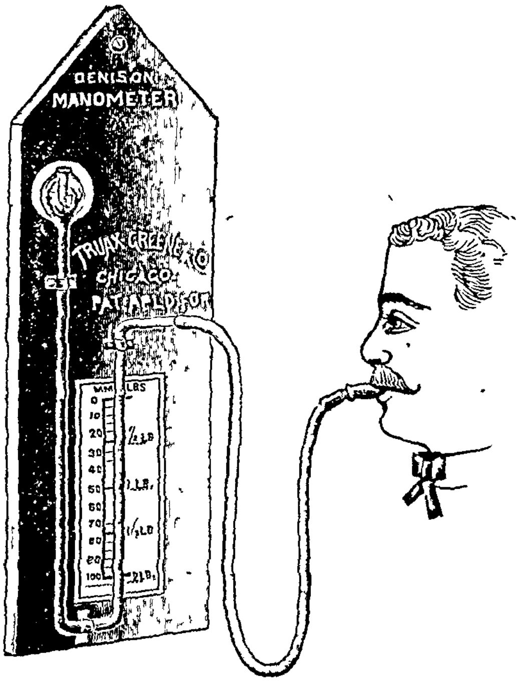
Then in comparison with general mortality statistics, obtained without reference to insurance, the companies would know two important facts; *first*, the quality of work their agents and physicians are doing for them; *second*, the great importance and tremendous expense of the consumptive class on their lists. They would incidentally learn the great value to the companies of climatic change and close supervision or individualization in these cases. This needed list should comprise deaths from consumption, fibroid phthisis, chronic pneumonia, chronic pleurisy and bronchitis, tuberculosis, asthma, scrofula, "wasting" etc. My experience, in an effort to get these data from the companies, is that they haven't them, or if they have they are not of such a nature as to be given to the public. Of course we must admit a certain untrustworthiness of mortality statistics, the insidious and usually complicated existence of tuberculosis furnishing one excuse for a flexible estimate, but broadly it can be stated that the cost in death losses paid by life companies, in the past fifty years, has been between $350,000,000 and $600,000,000. In view of the importance of this consumptive class to the company's welfare, and the, to me, undoubted fact that latent tuberculosis is at the bottom of more failures in health than that subtle condition ever was credited with, I recommend to medical directors of life insurance more exact and systematic safeguards against the entrance of such impaired lives on an equal footing with selected healthy risks. There is not time and so it is not here my purpose to fully discuss the intimate relations which should always exist between the medical director and the medical examiner of a life insurance company. The confidence which is reposed in these two by the unprofessional officials of the company is as yet insufficient to offset the excessive interest the agent has to insure anybody regardless of risk, or the desire of many applicants to be rated higher than their physical condition fairly warrants. In a carefully constructed entrance examination paper, among the physical conditions required to be stated, I think the *spirometrical* and *manometer record* of the applicant should be included. Then, if either or both are below a given fair standard, (say 25 or 30 per cent. below) for the applicant's height, sex, age, etc., the exposure of the applicant's chest and the taking of the semi-circumferencial measurements of the two sides, should in all cases be required. By these measurements the following will be shown: First. If an unnatural difference in the respiration movements of the two sides of the thorax has to explain, by inference, a deficient spirometrical record, with manometer record normal for that person, then surely that inference is toward *fibrosis* or *pleuritic adhesions* and perhaps *latent tuberculosis*. Second. If, with similar variation in movement, a marked deficiency in manometer record has to be explained, the spirometrical record being all right, then the inference is to a *positive weakness*; which must influence the applicant's vitality. Third. If, however, deficiency below a standard of health both in the spirometrical and manometer record of an individual, can or can not be accounted for in deficient movement of one or both sides, there is then a *suspicion of weakness*, to possibly elucidate which a more careful investigation is needed before accepting the risk.

Gentlemen, these are new points for life insurance examinations which I believe I have the honor to present for the first time. Whether their observance will shut out 10 or 20 per cent. of the consumptive mortality, which is now borne by the companies, I do not know, but I am sure they will account for many doubtful cases not usually made plain by an ordinary physical examination. These rules are the outgrowth of my personal investigations with the spirometer and manometer, samples of which are here presented as made for me by Messrs. Truax, Greene & Co. of Chicago.



Denison's Spirometer.

In the winter and spring of 1873, when, after pulmonary hemorrhages, night sweats, etc., I was myself health seeking in San Antonio, Texas, I met Dr. M. Slocum, a physician whose experience so well illustrates a plan I had already conceived that I will here relate his case: Some sixteen years before this time of my meeting Dr. Slocum he found himself a health seeker in San Antonio, Texas, two years after his wife had died of consumption in New Orleans. For her health he had moved from the North to the South. Whether his was a case of infection or not I am not certain; but he was really in a serious condition, emaciated and having several hemorrhages in the streets of San Antonio, excited even by the effort of walking a block. He was also broken in finances, and naturally thought of utilizing the then present value, to the company carrying it, of his life insurance. He had a $5,000 policy on his own life in his wife's favor. I believe this was either in a New York or New England company. Three of the best physicians in San Antonio critically examined him and made a written report of the facts, recommending to the company to pay Slocum at least 50 per cent. of his policy for its surrender. The company sought to parley with their man, and offered him $1,500. That was worth a thousand times as much to him living as to him dead, and he accepted the offer quickly, the more so as the indications were even then apparent of a disruption between the North and the South. He took this money and resolved that he would not go inside a house for six months, and kept his resolve. My oldest brother, then a resident of San Antonio, used to go out to Slocum's tent on the prairie to play chess with him under the mesquite bushes. Well, sixteen years afterward, when I met the doctor, he was clerk and recorder of Bexar county, a hale and hearty man of 160 lbs. weight, though his voice was yet husky and he relied considerably on stimulants.



It can almost truthfully be said it is not consumption that kills, but *worry*. The money the life insurance company sent saved that man's life. The officers of the company made a good bargain, and they need not reproach themselves because they did not hold on to that policy in order to save the over $20,000 which, in value to them, it would have amounted to if it had been kept in full force up to the time Dr. Slocum eventually died, about twenty-three years from the time the company made the settlement with him.

Was it not perfectly natural for me to ask, if this much good thus came to this man, why not to all insured under similar circumstances? Might I not have been insured myself, and the medical fraternity of my then home, Hartford, Conn., justly conclude that a hundred, such as I then was, would average to live not over three years, *i. e.*, to remain in the Connecticut valley. Now, twenty years afterward, when a policy on my life would have more than trippled itself in value, I survive and am permitted to disturb the contented insurance man with these vexing conundrums!

The country of southwestern Texas, New Mexico, Arizona, Southern California and Colorado is full of illustrations of this kind, so that it would be possible to assert with approximate accuracy, that classes of tubercular invalids who would have averaged to live two to four years, in their Eastern homes, have already lived from five to fifteen years in their newly chosen residences. The significance of this is plain enough when one considers that a prolongation of life nine years for a man of forty, doubles the value of his policy to the company holding it, through the incoming premiums and the use of the money which would otherwise have been paid out because of his death.

Twenty years ago I hoped to be able to present the exact data that would serve as a basis of this life prolongation, *i. e.*, *a classified table of climates and classes of invalids*, together with the different longevities of these invalids, residing thereafter in the several climates. But over 3,000 physicians, carefully selected by prominent medical friends to represent the whole United States and Canada, to whom my circular of inquiries was then sent, had not the requisite uniformity of mental training, nor habits of studying or recording disease, to make their combined replies of real value. There was not then, and there is not yet among medical men, enough system of disease investigation nor uniform expertness in diagnosis to formulate *a table of disease longevities.* There is knowledge enough of both climate and consumption within the great body of medical men, but it is so often nullified by individual peculiarities, experiences and environment, that collectively it is practically valueless. Success must come largely from individual effort and proficiency. This conclusion brings us to the most important and final part of my paper. The remedy for professional incompetency lies in some appropriate system, and a better familiarity with every diagnostic means. The system which I here present may not be the one in all its features which will be eventually endorsed by the medical profession as the best, but it is very much better than none at all.

"*The Chest Diagnosis Chart* and aid to climate selection," which is the main feature of this plan is the outgrowth of much study. By a two years' use it has enlisted my confidence. It tends to avoid the omission of any important part of a critical clinical or physical examination. It stimulates accuracy in defining and graphically illustrating thoracic disease. It favors an earlier detection of enfeebled or diseased states, through this accurate association of changed physical conditions. It refreshes and strengthens the memory as to previous investigations of a given case. The chart has been submitted for criticism and correction to some of the leading physicians in the United States, and very generally received their approval. The severest criticism is thought, by two distinguished physicians, to be the great difficulty in getting the ordinary physician to go into the amount of detail required to properly fill out the document, and also his natural hesitancy to make any kind of an exact statement as to internal chest conditions. If this criticism is just, it is one of the greatest commendations the chart could receive. Accuracy and truth can nowhere be of more value than in regard to diseased conditions within the human body, and that means, be it a diagnosis chart or a professor of physical diagnosis in a medical school, which will teach the ordinary physician *to know what he says and say what he knows*, is a great blessing to humanity.

Let it be understood, if you like, that the practice of such innovations will hardly be established among the older men in the profession, who are almost unchangeably fixed in their ways of investigating and combating disease. It is the younger men in the profession whom I hope to gain as friends and colaborers in this new field. I would that every teacher of physical diagnosis in the land would do with his students as I have and shall hereafter do with mine; namely, drill them in this system of clinical research and physical diagnosis, and present them with copies enough of some such a chart as this that they will get into correct habits of recording their chronic cases at the start of their professional career. As to the too little interest among physicians to attend to the required detail, a knowledge on the part of the public of the benefits to result will bring a healthful demand for such services. However trivial, prolix or exacting an ordinary life insurance examination may be, the details are all attended to before the application is considered complete. This influence in favor of accuracy as to detail gives me the strongest hope for the chart's utility. What a wonderful educator of the medical profession such an agency would be, if adopted and generally utilized by all the great life insurance companies! All this increase of labor on the part of medical men would be in the direction of greater proficiency in the diagnosis and description of disease. Besides it would be productive of more uniform and correct information of the healing effects of different climates than obtains at present.

The chart is here presented for your inspection, with the directions for its ordinary and special uses printed on the first page. Besides its use for preserving a record in chronic pulmonary cases, directions are given for carrying on a consultation between widely separated physicians, and for an intelligent inquiry as to the suitableness of a given climatic change, before a suspected or known invalid undertakes a journey to a distant health resort. The plan I should like to see the life insurance companies adopt, and one I am sure they could afford to carry out with great credit and profit to themselves, is as follows:

Each company uses its own force of selected medical examiners, or if preferred designates a smaller force of physicians, skilled in physical diagnosis, to represent the principal centers where their policyholders reside. Besides these they designate their own *expert referee physician or physicians;* perhaps one specially skilled in the climatic treatment of respiratory diseases—at the headquarters of the company or elsewhere—or several such representing most prominent health sections of the country. The company then notifies all its policyholders that under specified premonitory or actual symptoms of disease, such as pulmonary hemorrhage, night sweats, progressive wasting of flesh, etc., they will send the chest diagnosis chart, have a critical inquiry made by their chosen local and referee physicians and return the written report and advice of these physicians for the policyholders' benefit and final decision. The company may do less, or even more than this much. One physician suggests that the company should have a reëxamination of all their insured at stated periods; another that all impaired lives only need be so reëxamined. The company, however, could well afford to promise to loan the insured a given per cent. (based on his disability), of the amount named in his policy at a small rate of interest, in case this aid was needed to help bear the expense of the advised change of climate or occupation. The applicant, with all these benefits so well and gratuitously furnished him, should not and probably would not refuse to obey the proffered advice. The company would reap the reward in the resulting prolongation of life. This return would be great for the outlay, according to how early in chronic lung affections the needed change would be inaugurated. The longer it is before the breaking down of lung tissue, the better. Hence the great advantage of an *early* inquiry like the one here proposed. If, as statistics prove there are over 100,000 who die annually of consumption in the United States, and 200,000 who are already more or less affected for every 100,000 who die, the proposition is how to reach the new cases so that they will average eight to ten years of life thereafter, instead of only two.

Gentlemen, I see no objection on the part of our profession to this plan for the enhancement of life assurance's utility. But I must tell you that some seventeen years ago the president of one of our largest life companies accepted this scheme practically as here stated, but the plan was vetoed by his medical department because "it would not do," they said, "to take away patients from the men the department depended upon to do their examinations, and send these policyholders away to a distant climate that their lives might be prolonged."

It remains for you, gentlemen, to say if this imputation is not a libel on your good name as honorable physicians, always seeking the best welfare of your patients.

This whole matter is now presented in a form which, I trust, will meet your approbation, and coming to public light through you, representative men of the medical profession, is freely and unreservedly given, with the hope that this method of recording cases, and this beneficent plan for life companies, will receive your hearty endorsement.

In conclusion, I crave your indulgence for this fragmentary treatment of so many questions, each of which is of importance enough for a separate thesis. This method of presentation seemed to be warranted by the mutual interdependence of these various interests.

I shall be gratified if even this much shall prove a help to those who will hereafter take up the work and more completely present and elaborate the different phases of this important subject.

[After the reading of the above, a Committee of the Section of Medicine was proposed to "consider the suggestions embodied in the essay." This committee reported: "That the adoption by the medical profession of a definite and comprehensive plan of recording, with explicit and accurate statement, the results of examinations of persons affected with chronic pulmonary disease, as proposed by Dr. Denison, is a consummation earnestly to be desired, since it would be conducive to the early recognition and to the prompt and effective treatment of such disease, and to a correct appreciation of its course and tendencies, besides affording the best possible basis of consultation between widely separated physicians."

The financial features, as to life insurance companies undertaking to aid their consumptive insured to seasonably profit by climatic change, etc., were advised "to be referred for their advancement to the physicians connected with each insurance company."]

# THE CHEST DIAGNOSIS CHART.

## AND AID TO CLIMATE SELECTION.

By CHARLES DENISON, A. M., M. D., DENVER, COLORADO, Professor of Diseases of the Chest, and of Climatology, University of Denver, Author of "The Rocky Mountain Health Resorts," "The Annual and Seasonal Climatic Maps of the United States," Etc.

**The objects of this examination record are, first and chiefly**—To afford the physician a suitable means of **preserving the exact data** of his examinations in chronic pulmonary cases, and incidentally to foster among physicians the habit of accurateness and thoroughness in physical diagnosis.

**Second**—To furnish a basis of intelligent **correspondence** between widely separated physicians when a **consultation** is desired.

**Third**—To insure success and prevent useless expenditure on the part of invalids **journeying for health,** by intelligently canvassing the whole subject beforehand by means of this chart, which is meant to be a **physical photograph** of a patient's real condition, presented for the judgment of a physician expert in such matters.

**Fourth**—To present to Life Insurance and Beneficiary Associations a means for the early detection of respiratory and other associated diseases largely controlled by climate and a basis for **the prolongation of these lives** at a time when a more or less complete restoration to health is quite possible.

**That is, to furnish a critical inquiry**—(a) By a competent **Examining Physician** at or near the patients home. (b) By a ***Microscopist,*** *if the sputum is to be stained* and examined. (c) By a **Referee or Consulting Physician** in a distant city or health resort.

While no restrictions are placed on the use of this chart or system by any invalid, yet the family physician is most likely to first conceive the idea of a necessary change: therefore, if the attending or family physician makes the first examination, it is preferrable that the choice of Referee Physician, and the final acceptance of the plan proposed, be largely left to him. The Referee Physician, returns to the home physician (or to the patient, if so desired) his own written opinion, answers to questions, advice about living expenses, and such additional information, or published documents, (about climate, diet, exercise, etc.) as he thinks needed, and also if requested, this chart. Then the enquirer has **all the available facts** before him for his study, and for his own or his doctor's conclusions.

## Additional Inquiries and Explanations.

(To be filled out by the patient or first examiner.)

**The financial question**—An important consideration is the ability of the enquirer to follow the advice which may be given. Under which head (1, 2, 3 or 4) is the patient to be classed?

1. Financially fully able and willing to live as required and devote himself to getting well,..........
2. Do what ever is best at moderate expense for one year or..........
3. After four months or sooner, if physically able, will be compelled to take up..........occupation. What outdoor work would he be willing to substitute?..........
4. Has no money and would be compelled immediately to depend upon his trade, herein stated, or upon.......... ..........for a livelihood.

..........

If the patient prefers, he, or his physician for him, can state his preference as to the climatic change to be made, giving his reason therefore, whether financial, social, business or pleasure.

**The life insurance problem, if it is to be considered, requires**—1. *Does the patient desire the insurance company interested in his longevity to investigate the needs of his case, and does he intend, as nearly as possible, to abide by the decision reached?*

..........

2. In what company or companies is the patient insured, giving age of policies and amounts?..........

..........

3. Would the financial aid of a loan secured by this insurance be needed in order to carry out any recommended trial or adoption of a new climate or change of life from that existing at present?..........

---

The examination fees—In the original examination the fee for such a critical diagnosis should be $5 to $10 or more, according to the custom of the examiner in such cases; depending also upon whether or not a microscopic examination of the sputum is made. The final consultation fee, if the Referee Physician gives a full written report of his own opinion, etc., should also be $10, which should accompany the request for consultation. Where, because of the limited circumstances of the applicant, the first examiner so requests, the fee of the Referee Physician may be considered as $5, as also when *only* the decision of a single question is desired not involving a consultant's usual responsibilities.

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# THE CHART.

NOTE—In answering, those portions printed in light type can be written over; and all conditions are to be considered as NORMAL which are not otherwise specified, or elsewh in the chart shown to be diseased

**Examination** made by Dr. P. O. Address 18

**Patient's name?** Present address Former residence?

Age? Occupation? Married or single? Height, ft? In?

**Inheritance to** Consumption or what chronic ailment?

**Does patient resemble** father or mother more? Exposure to infection, explain if any probable?

**Condition of health** or life previous to present illness?

**Commencement,** date and cause?

**Times of severe sickness** since then?

**First appearance** of night sweats when? Blood spitting? Profuse yellow expectoration? (2 to 4 ounces in 24 hours)

**After occurrence** of night sweats, when? Blood spitting? Profuse yellow expectoration?

**When,** if at all, did dyspnœa commence?

**Weight** (pounds) in health, at best, when was it? At least since sickness, when? Now?

**Changes in Residence** since sickness and what periods?

**Effect** of such change or treatment?

**Has health** been better winters or summers?

**Any** experince in high altitudes?

**Accustomed** to what systematic exercise?

Color? Approximate quantity per diem in ounces? Bacilli present?

hen examined and by whom? Skin moist, dry or sallow?

**Afternoon Hectic?** Cough? Pain, where? Hands or feet cold?

**Bowels formerly?** Now? Hemorrhoids or any rectal trouble?

**Patient's habits.** Smokes? Chews? Use of stimulants? Can walk how far without resting?

**Appetite?** Digestion? Any previous avoidance of fatty food? Sleep?

**Pulse,** sitting? Respiration Temperature, F? Time of day? What daily range if known?

**Spirometrical** record, cu. in? Manometer M. M.?

**Complications?** Nervous state? Kidneys and bladder? Liver?

**Women**—Menses? Childbearing? Female disease, etc.?

(Any history of rheumatism, constitutional taint, glands enlarged or ulcerated, skin disease, or unusual drain on patient's vitality, as p vious sexual excesses, explained here or by separate letter as desired.)

**Nose and Throat.**—Describe, if they exist, any obstruction to nasal breathing and the cause?

**Any Rhinitis?** Otitis? Pharyngitis?

**Laryngitis?** Aphonia? Hoarseness?

**Locality** and extent of any ulcers, tubercular or adenoid growths, etc.

# PHYSICAL EXAMINATION.

(Made on bare chest.)

**Inspection**—Emaciation? Irregularities? Depression? Clubbed fingers?

**ensuration**—Circumference inspiration in inches? Expiration?

**lovement**—Measure of two sides—Right, inspiration? Expiration? Left, insp? Exp?

**leart**—Normal? Murmurs? Size?

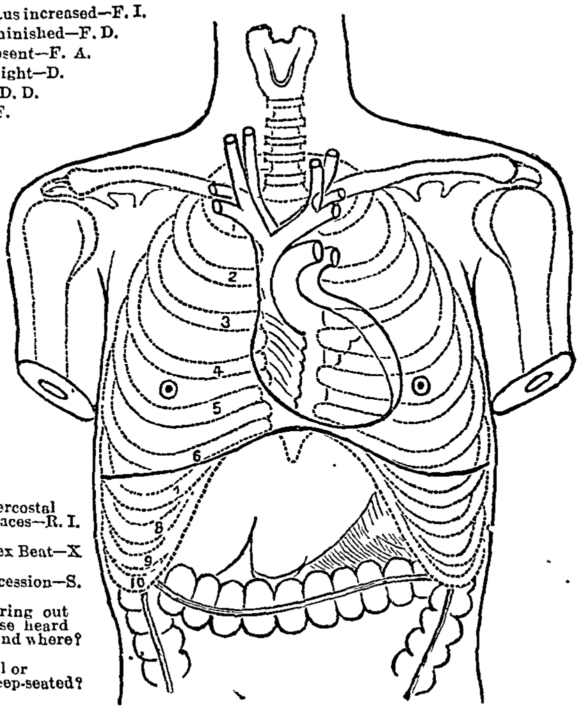
**ungs and Pleura.**—Percussion, stethoscopic percussion and auscultation?

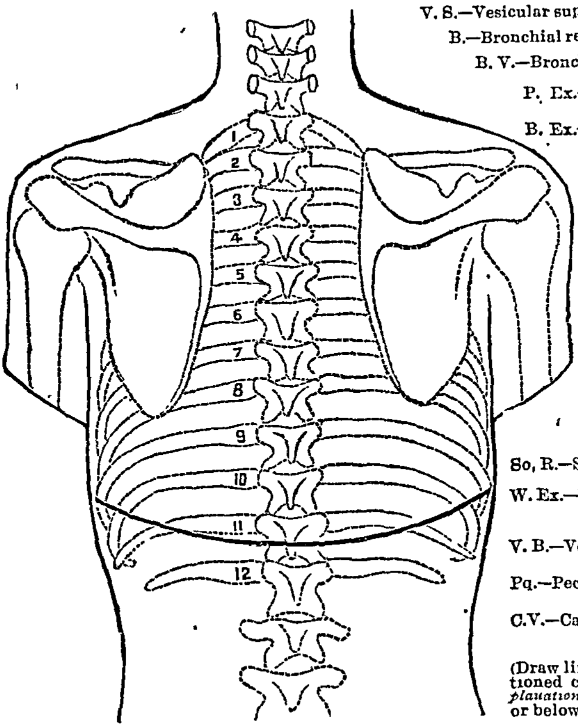
raw lines from signs named to diseased areas, or indicate by marking these abbreviation letters over the diseased spots or at the ends of lines drawn outward from them. Also encircle excavations—approximate size.)

Vocal Fremitus increased—F. I.
ocal Fremitus diminished—F. D.
ocal Fremitus absent—F. A.
Dullness, slight—D.
ullness, decided—D. D.
Flatness—F.
ympanitic Resonance—T. R.
acked metal" on stethoscopic percussion—C. M.
ollow sound on same—H. S.
Cavity—C.
Honey-combed—H. C.
Bronchiectasis—Br.
leuritic Friction—P. F.
leuritic Adhesion—Ad.
leuritic Effusion—Ef.
etraction of Intercostal spaces—R. I.
Apex Beat—X
Succession—S.

oes coughing bring out rales not otherwise heard and where?

re they superficial or deep-seated?





V. S.—Vesicular suppressed.
B.—Bronchial respiration.
B. V.—Broncho-Vesicular.
P. Ex.—Prolonged Expiration.
B. Ex.—Blowing Expiration.
C. B.—Cavernous Breathing.
C.W.R.—Cogged-wheel Respiration.
M. R.—Mucous Rales.
G. Gurgles.
C. R.—Crepitant Rales.
S.C.R.—Sub-Crepitant Rales.
Sib. R.—Sibilant Rales.
So. R.—Sonorous Rales.
W. Ex.—Whisper Exaggerated.
V. B.—Voice Bronchofonic.
Pq.—Pectoriloquy.
C.V.—Cavernous Voice.

(Draw lines to any unmentioned condition from *explanations* to be added above or below these diagrams.)

**Diagnosis:**

**Treatment,** climatic change recommended, etc.

## ADDRESS ON STATE MEDICINE.

*Delivered before the American Medical Association at the Forty-fourth Annual Meeting held at Milwaukee, June, 1893.*

BY WALTER WYMAN, A.M., M.D.

SUPERVISING SURGEON GENERAL OF UNITED STATES MARINE HOSPITAL SERVICE.

(*Concluded from page 27.*)

A uniform quarantine code for the maritime ports of the United States has long been the desire of quarantine and sanitary officers, and heretofore all attempts have been futile.

A board of officers of the marine hospital service was summoned to prepare a code. After the rules and regulations had been prepared and before adjournment of the board, a conference was called of the quarantine officers of the Atlantic and Gulf coasts representing the cities and ports of Portland, Boston, Providence, New Haven, New York, New Jersey, Philadelphia, Wilmington, Del., Baltimore, Norfolk, Wilmington, N. C., Charleston, Savannah, Florida, Mobile, New Orleans and Texas.

This conference was called to order the 16th of March and remained in session two days, the first day being devoted to a consideration of the rules which had been prepared, and discussion thereof, with the understanding that there would be no vote. The second day the rules were again read seriatim, discussed and voted upon. After adjournment of the conference, the board continued its labors paying special attention to the views expressed in the conference. The rules thus perfected were then promulgated by the secretary of the treasury, April 4, and a letter enclosing them was sent to each maritime quarantine officer, calling attention to the law and to the fact that these were minimum requirements and requesting an expression of willingness and ability to execute them. Satisfactory responses have been received from all ports. These regulations relate first, to inspection of vessels, stating what vessels shall be inspected, the time of inspection, and the method of making it. They define the quarantinable diseases; and declare under what circumstances vessels shall be placed in quarantine. They relate also to the treatment in quarantine, particularly of vessels infected with cholera and yellow fever, and the time of detention and care of the passengers arriving on such vessels. Special regulations exist with regard to rags; also with regard to vessels *suspected* only of being infected with yellow fever.

As a further protective measure with reference to cholera it may be stated that on the appearance of this disease in any maritime port, a system of immigrant train inspection will be at once set in operation, medical inspectors to accompany each train from that port into the interior and provision made for the removal and care of the sick en route.

### FOREIGN.

But while we have thus erected our sanitary fortification upon the coasts and have provided the means for *internal* warfare against epidemic disease, our duty is not yet accomplished. The danger of the attack should be eliminated. The sense of the American people should be aroused to an indignant protest against the approach of these diseases from other lands. Not one of them is indigenous. Cholera comes from India and Arabia, yellow fever from Havana and other ports of Cuba, and from Central and South America; typhus fever comes from Russia and occasionally from Germany. It is time that a vigorous protest should be made to the governments of the countries where these diseases flourish. Every nation should be held responsible for any conditions within its border or within its dependencies which tend to propagate epidemic disease that may be carried to other nations with which it expects to maintain a friendly commerce.

Is it too much to expect that the *fons et origo* of cholera in India shall be eliminated? But before discussing cholera in its home, consider a moment one of the chief means by which it finds egress therefrom. I refer to the religious pilgrimages.

In Mesopotamia are four Shiah shrines, the most sacred, Karbala, being the place of pilgrimage for large numbers of Shiahs from both India and Persia. Thousands of bodies from India and Persia and other countries where the Shiah faith exists, are brought here by the pilgrims for interment. The place is one vast burial ground and cholera raging is carried back to their respective countries by the pilgrims.

In Mesopotamia also is the holy city of Islam where the Mohammedan sect known as the Chitty send their dead for burial. In 1889 cholera was imported there from Bombay in the clothing surrounding the dead sent from Bombay for interment. Besides Karbala and Islam in Mesopotamia, Hurdwar in India, and Mecca and Medina in Arabia, are great foci for the development of epidemics which diverge therefrom in every direction.

In 1890 there arrived by the sea at Jedda and Yembo, the seaports of Mecca and Medina in the Red Sea 43,000 pilgrims, of whom 28,000 only returned; the balance representing the victims of cholera.

Why should the whole civilized world be allowed to suffer through the constant dread of invasion, or invasion itself of cholera, on account of the religious fanaticism of the Mohammedans of the East? Why should the civilized nations of the world continue to look complacently upon these pilgrimages to Mecca with their horrible accompaniments of constant disease and death? Death while en route to the shrine at Mecca is welcomed by all true followers of the prophet as a certain passport to eternal bliss! So long as this religious theory affects themselves alone, it might be viewed with complaisance, but when it involves the health and the lives of thousands of others to whom such a thought is a very absurdity, it is the right as well as the duty of those others to protest. This subject has no longer a faraway aspect. Steam has brought us into closer connection with Mohammedism. All nations are incomparably nearer to one another than twenty-five years ago, and the welfare of the most distant places on the face of the earth has now a direct bearing upon our own health and lives. The Mohammedan pilgrimages are a subject for international arbitrament.

What pressure can be brought to bear upon the Turkish or other government, to strip these pilgrimages of their disease bearing features, is a subject for immediate consideration, but one that will require careful study on the part of those versed in diplomatic relations. But when it is remembered that the vessels which carry these pilgrims, and upon which this disease breaks out, are owned by other nations it would seem entirely practicable to establish restrictive measures. I know that some of England's vessels carry these pilgrims, as well as vessels of other nations. Are not these vessels, therefore, and the governments under whose flags they sail responsible in great part for the spread of this horrible plague?

Again, with regard to the harbors of the West Indies and South America, yearly menacing our coast —should not some pressure be brought on their governments to place them in sanitary condition? Ask of the men who, year by year, stand upon the quarantine piers of our southern cities and greet the vessels as they come from these infected ports, who remove to hospital the crew or passengers stricken with yellow fever, who clean and disinfect the ships, and whose minds in addition to the bodily activity required are strained from May until November lest through some chance oversight of their own, the terrible contagion of yellow fever may pass their outport and strike the coast of the United States. Despite the exemption of the last few years yellow fever is the prevailing thought throughout the south during this period. The quarantine officers, the physicians, the commercial men and the daily press are on the *qui vive*, watchful, anxious. Why? Because, forsooth, our neighbors are content to live with an indifference to sanitation, life and health unknown within our borders.

In connection with the extermination of the source of epidemic disease should be mentioned the recent brochure of Dr. J. Telyafus, of Tiflis, Russia, who has expressed his views upon the means of strangling cholera in its Indian home and thus freeing Europe and America from the constant menace of its periodical excursions. I quote from a recent review:

"Dr. Telyafus takes this exception to the opinion that any attempt to exterminate the germs of cholera in Indian is utopian. He states that it has been stamped out in the Nile delta, and that similar, or more energetic measures, would be equally effectual on the banks of the Ganges. Formerly the fellaheen of Egypt interred their dead on the banks of the river Nile, and the bodies were then washed out into the stream during the annual overflow of the river, and were carried down to spread disease throughout the delta. Since an end has been put to this custom, the plague no longer harasses the country. While it would be difficult, if not impossible, to restrain the natives of India from casting their dead into the waters of the sacred Ganges, it might be possible to compel them to cremate their dead and throw the ashes, if they will, on the border of the river. Drainage and the planting of the eucalyptus tree, while an enormous undertaking, is one, in the opinion of Dr. Telyafus, not impossible; similar work having been already accomplished with profitable results in Algiers."

### THE EFFECT OF IMMIGRATION ON THE PUBLIC HEALTH.

A most important subject for consideration at the present time is the effect of immigration on the public health. So far as *epidemic disease* is concerned it is superfluous to call attention to the menace thereof accompanying immigration; and the measures taken to meet this danger, and the one held in reserve, prohibition, have already been described.

Concerning the other contagious diseases, not ordinarily epidemic, there is no doubt also of the increased liability thereto in the United States from this same cause.

Recently a cablegram was received from the medical officer detailed at Naples that nine ships would leave within ten days, carrying 11,000 immigrants. They are arriving at New York now at the rate of 15,000 a week—each week a new city's population grafted on the nation!

This wonderful movement of the earth's inhabitants during this latter part of the nineteenth century presents many phenomena of striking interest to the sociologist, and many problems to the sanitarian.

Where do they come from, why do they come, and what is their ultimate condition? From the standpoint of the sanitary officer it is difficult at this time to see aught but danger in this movement, or to have any other wish than that it might be stopped.

But if we may rise above our present fears and consider the subject from a very broad standpoint which commands an international as well as a national or local view, we may see in this movement a blessing to humanity not only political and intellectual, but physical as well.

Pressed out from their narrow confines, these people in swift moving columns and in swift moving ships are landed on our coast; they separate, and are almost lost to view in our vast expanse of territory.

Forced out of overpopulated districts either by a Russian decree or by their own appreciation of their unfortunate surroundings, they seek the United States as a land of promise, and in their broader surroundings and breathing the political life of a government of the people by the people, a broader and more intelligent manhood *must* be theirs.

First impressions are lasting, and the opportunity therefore is great to impress upon this large and constant addition to our citizenship a profound regard for the laws of public health in their new homes.

At the foreign port of departure the immigrant to-day receives his first sanitary impression of the new world as he presents himself for scrutiny by the medical officer of the United States government before being permitted to board his ship.

Again must he pass a quarantine officer at the port of arrival, and once more at the immigration station be closely and individually scanned or catechised by the medical inspector.

How can he fail to be impressed, to some degree at least, with the importance attached to health in the United States?

On arriving at his destination in the State chosen for his permanent home, he is the better prepared to accept such restraint or obligations of a sanitary nature as may be imposed by a local or State board of health.

There is opportunity, therefore, for each board of health to build up within the borders of the State a tolerance and respect for sanitary laws.

Nor is the effect upon the overpopulated districts in Europe to be lost sight of. Surely the relief in some communities must be obvious.

Moreover, statistics prove that thousands of immigrants revisit their homes. The sanitary teachings of the new world go with them and can not be without effect.

We can not forget, however, that while the physical condition of the immigrant is improved, and th sanitary condition of the locality he has left, th same can not be said of our own domain and people and greater stringency both in the laws and their execution is demanded.

THE NON-EPIDEMIC CONTAGIOUS DISEASES.

Of the contagious diseases not ordinarily epidemic in character, but which are actually the more destructive to human life (as diphtheria, scarlet fever, typhoid fever, measles and tuberculosis), it may be said that with the exception of one (tuberculosis), the means of preventing their spread is so plain that it is within the power of every community to accomplish it.

While therapeusis is an indispensable antagonist to these diseases, their subjugation will be accomplished only by a triple alliance of *law*, *organization* and *disinfection*. Gradually the laws are spreading throughout the United States and municipalities, requiring notification, placards, disinfection and construction of special hospitals. Within a year even the White House has been placarded for scarlet fever, furnishing notable illustration of cheerful compliance with the law which may well be considered by those who would oppose it.

Sanitary plumbing and architecture, purity of water supply, proper disposal of sewerage and garbage, all are prominent subjects of town and municipal concern, and any community found indifferent thereto should be held up to public condemnation.

All sanitary organizations should be modeled after our national and State governments, embracing the three heads—legislative, executive and judicial. The framing of laws requires a skill and training apart from that required for their execution, and they accomplish their object more effectively when executed by others than those who make them, and back of them a wise judiciary preserves a just balance between the individual and the public.

Valuable adjuvants from time to time in municipal sanitation are the voluntary organizations called into existence by some particular threatening danger or by official laxity.

The most recent organization of this nature, formed because of the possible advent of cholera, and one which may be taken as an excellent model, is the Sanitary League of Washington, a full description of which will be found in the abstract of sanitary reports of this date.

DISINFECTION.

But with regard to the destruction of these domestic contagious diseases the keynote of success appears to be disinfection, and while the germicidal properties of the several disinfectants are known, still much depends upon their mechanical application—upon the mechanical devices for their distribution.

As stated by Dr. Cyen Edson, health commissioner of New York, whose experience in municipal and house sanitation is probably unsurpassed, the great difficulty in practical disinfection is in eliminating the personal equation; that is, on account of the carelessness or ignorance of individuals to whom are intrusted the actual work, their failure to comprehend its principles and to care for details, it is often inefficient.

Now this personal equation may be eliminated provided a mechanical device is found by means of which there shall be obtained a diffusion and penetration of the disinfecting gas equal to that of the germs of the disease.

Recently attention has been called to two new *forms* of disinfectants, which with especial mechanical devices promise to be among the most potent instruments in our sanitary armamentarium.

The first of these is a recent discovery produced by the action of an electric current, electrolyzing sea water.

Doubtless all the details concerning this agent will be published by its inventor in New York, but at present I can only say that the resultant solution contains germicidal and deodorizing properties of a remarkably high degree, while the cost is immeasurably lower than that of any known disinfectant permitting the application.

The second disinfectant is the anhydrous liquid sulphur dioxide. True, this has been known for several years, and experiments demonstrating its utility were made in the laboratory of the marine hospital at New York five years ago. But no device for its practical use has been offered till within a month, and it is but recently that placing it in the market for sanitary purposes has been seriously considered.

This liquid dioxide, confined in copper carboys of from fifteen to 200 pounds weight, may be easily transported, and simply by liberation will throw off the sulphurous acid gas, filling either a small room or the hold of a vessel with any required per cent.

A simple apparatus for carrying the gas cylinder from place to place, which at the same time can be used for weighing the gas liberated, has been recently devised by Passed Assistant Surgeon Kinyoun, and may be seen in the marine hospital exhibit in the government building at the Columbian Exposition.

The present difficulty with regard to this disinfectant is that its manufacture is a secret process, and the first cost of a plant large enough to supply the demand would be great. But it has been suggested that the general government might appropriately meet these two difficulties, and in doing so would confer a great benefit upon the country, for it could then furnish to local health authorities any amount of the agent in question, and at a cost that would permit its free use.

The object of the present paper will have been accomplished if it but serves to awaken interest in the possibilities suggested by its title.

Says Dr. D. B. St. John Roosa in the May number of the magazine: "Many of the illnesses that are thought to be special dispensations from Providence occur only because of the neglect of personal care.

"The time will probably come, however, when the human race will everywhere, with only exceptional instances, live out its life. It is perfectly possible to conceive of the domination of human intellect and human force being so universal as to abolish accidental deaths."

The day of this deliverance seems yet far off. We may not even claim to see the morning's rosy hue, but surely we *may* discern its first gray dawn and rouse to effort. The struggle is worthy of man's greatest powers, and even while striving we shall add great motive power to the upward progress of man toward his final destiny — whatever that destiny may be.

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Blanks for securing membership in the Association may be obtained by writing the Treasurer, Dr. R. J. Dunglison, Philadelphia, lock box 1274; or this office.

# NECESSITY OF VOCAL PHYSIOLOGY AND SYSTEMATIC VOICE TRAINING IN OUR PUBLIC SCHOOLS AND COLLEGES FOR THE PREVENTION OF DISEASES OF THE LARYNX.

Address on Laryngology. Read at the Forty-third Annual Session of the State Medical Society of Pennsylvania, held at Williamsport, Pa., May 16 to 19, 1893.

BY J. WALTER PARK, M.D.
HARRISBURG, PA.
LATE CLINICAL ASSISTANT ROYAL LONDON OPHTHALMIC HOSPITAL, LONDON, ENG., SURGEON TO THE EYE, EAR, NOSE AND THROAT DEPARTMENT, HARRISBURG HOSPITAL AND CHILDREN'S INDUSTRIAL HOME,

The State Medical Society of Pennsylvania in 1883 passed a resolution that there should be annual alternating addresses on the subjects of ophthalmology, otology and laryngology, but for various reasons laryngology was omitted in 1889, hence the first and last address on this subject was delivered by my esteemed friend, Dr. Charles E. Sajous of Philadelphia, in this city seven years ago. In looking over his very able address, I notice he pointed out to you the importance and relationship of laryngology to the general practitioner, as well as some of the advancements in laryngology up to that time. I will endeavor to-day to give you a continuation of the advancements on this subject, but in a somewhat different line of thought, viz: the necessity of systematic physical voice training in our public schools and colleges for the prevention of some of our most prevalent diseases of the larynx. This subject has lately been considerably agitated by some of our most eminent specialists in England, France, Germany, Scotland, Ireland and America, and no doubt will sooner or later result in the systematic teaching of the proper methods of breathing and speaking in our primary schools and the systematic training of the voice in all academies, colleges, and higher institutions of learning. The object of this paper will be at least in a measure attained, if I can arouse sufficient interest in the medical profession in general, so that they will give this subject serious consideration, and advocate its principles among parents and heads of families, who have children attending schools and colleges, for by so doing good results are sure to follow. If the governing and controlling power of institutions of learning have their attention called to this subject by physicians and scientific men in general, quacks or charlatans can no longer impose upon the credulity of the public by traveling around through the country teaching false methods, etc., when most of them do not even know the first principles of systematic voice training.

Let us take the child in its infancy as an example to begin with; when it first begins to utter audible sounds it tries to imitate its mother, nurse, or teacher, and tries very hard to formulate sounds into intelligible speech. Years are required to teach a child to phonate properly. Parents should therefore devote a great deal of their spare time in teaching their children how to formulate sounds into words, and articulate them properly, for by so doing, they assist them in acquiring more easily and quickly which otherwise they would not acquire except by a great deal of extra hard labor. At the age of four to six years a vast amount of good can be accomplished by the parents previous to sending them to school, in the various breathing exercises and the proper method of pronouncing words, and to correct them for every slang phrase they may utter. When a child is sent to school it is generally taught the art of writing by the proper coördination of its muscles in using the hand, as well as the proper position of the body while at its studies. If we thus teach them the proper method of using the muscles of the hand and body, why should we not have a teacher of vocal physiology to teach them the proper method of breathing, by chest, nasal and respiratory exercises, opening and closing the mouth, the modulation of the voice, etc., pronouncing words properly while in the act of phonation? This training should begin in the primary schools, and be continued with the proper advancements in the art, as the child advances in its studies, and extended to the time it has completed its collegiate education. There are very few colleges to-day that properly train the vocal powers of their students, and as a result a good orator or elocutionist is seldom found among their graduates; and likewise there are seldom heard on the pulpit, the platform, the stage and at the bar, men who as specimens of physical voice training are able to hold their audiences or juries spellbound for an hour two by their fine oratory and not suffer hoarseness or fatigue of their vocal organs; that is the time they should have full control of the respiratory movements of their lungs, know how to attack words at a proper pitch of the voice, and how to control their vocal chords, etc., without producing fatigue and congestion of the larynx and pharynx, which always follows when not judiciously used. Violently exercising the voice in the wrong register, and in an improper tone of voice, must eventually produce physical harm or disease to some parts of the larynx.

The physician must first skillfully perform his duty in seeing that the pupil can perform the proper nasal respiratory movements, by examining his nose and naso-pharynx, and removing all adenoid vegetations, and treating any existing hypertrophic rhinitis, hypertrophy of the tonsils, as well as take notice if there are any existing anatomical malformations which might interfere with the development of proper articulate language. Stammering is most always a result of failure to observe properly and of improper methods of teaching a child. The naso-pharyngeal diseases just referred to are also occasionally causes. The physician and specialist should first call attention to and point out all defects in an anatomical, physiological and pathological point of view, and if possible correct any existing defects and then place the pupil under the care of the scientific voice trainer. Pharyngitis is often produced by spasmodic, jerky, respiratory movements while in the act of attacking a tone, and by not knowing how to economize the breath that is exhaled, thereby producing false, harsh and congested tones. Raising the pitch of the voice without raising the voice itself is another frequent cause of congestion of the larynx. The part that should be cultivated is the natural tone of the voice in which a person speaks with the least effort. Lenox Browne says, "the lungs are the motors of respiration; the larynx the vibrating organ, and the chest walls, trachea, pharynx and naso-pharynx the resonating apparatus." The French actor, Talma, always made a habit of speaking in his ordinary tone of voice behind the scenes to some of his fellow actors previous to appearing on the stage, so that he could maintain the same pitch in his voice. This is an excellent habit for all clergymen and public speakers to form. Pharyngeal and laryngeal diseases would be an exception rather than the rule if this were universally put into practice. Madame Seiler says, "that if the physiology of the voice were better known and acted upon there would be but few complaining singers and speakers." There is no doubt that the solid basis of voice is a systematic and proper method of breathing; establish that first, and then begin the systematic training of articulate speech. Dr. Gordon Holmes describes the benefits of vocal culture as follows: "The general well being of the constitution is promoted by voice practice, because the wider chest movements accelerate the circulation of the blood, at the same time that they cause a more ample flow of fresh air in and out of the lungs. The obstacle to expiration offered by the contraction of the glottis during phonation confers a greater penetrating power on the pulmonary air, which perforce permeates the minute bronchi and distends the air vesicles of the lungs more effectively; thus the blood attains a higher oxygenation and greater purity, by which qualities it gains in power of stimulating the vital activities of the various tissues of the body as it courses through them. Effete matters are freely cast off, and new and wholesome material is assimilated in increased amount. The appetite, so to speak, of the various corporeal structures becomes more keen, and they are thus subjected to an exalted nutrition. And moreover, these effects have a certain permanency on account of the gains to the thoracic capacity, derived from the habitual increase of lung expansion necessitated by constant vocal exercise. Chest and laryngeal exercises in a systematic way accomplish some of the same results that are derived from a visit to higher altitudes, such as Texas, Mexico, Southern California, Colorado, etc.

The question is frequently asked at what age should a child begin to sing, or have its voice trained? Opinions differ materially on this question. Patti was taught systematically by her half brother, Barilli, and first appeared in concert singing at the age of seven years. She sang in concert with trained singers. Neilson was sent to "Wartel" when quite young. Jenny Lind was trained for the stage at the age of nine years, and (as is supposed) from forcing her voice, lost it at the age of twelve years, but regained it again at sixteen. Others who lost their voices in a similar manner, suffered from a paralysis of the arytenoid muscles of the larynx, or vocal ligaments. Manuel Garcia was her trainer after her recovery and the "Swedish Nightingale" soon became one of the world's most renowned singers. Listen to the child as it tries to sing one of its nursery songs; notice the tone and pitch of its voice, and you will soon be able to judge the voice compass; carefully watch it and see this compass is not exceeded by willful exertions on the part of the child. If it is, stop it at once; if not, allow it to go on by your assistance as much as possible, always careful that it wearies not in well doing.

You will notice from these remarks that there is no set time for a child to begin to sing, or have its voice trained. That question should be left for your teacher in vocal physiology, or voice trainer to decide.

Another mooted question is, whether a child should sing in concert or not. "Wartel" says if a child is possessed of a voice not worth keeping let it sing in concert. By analyzing carefully the opinions of a great many voice trainers we arrive at this conclusion: If a child has an exceptionally fine voice, which by special training would develop into an artistic one, never let it sing in concert until after it has been systematically trained and well developed in all the registers; it can not well go wrong after that. To preserve the sweet and natural tones of the child, to fit it for the stage, the platform, or the bar, it must be carefully and physically well trained when young, and it will develop into a sweet toned singer, or an eloquent and brilliant orator, and you will thus save many a child from some pharyngeal or laryngeal disease which it otherwise might have acquired by first singing in concert, previous to having any physical training. Many "might have been" famous singers are never heard, principally on this account.

If you thus carefully develop the delicate muscles of the larynx under the guidance of a scientific trainer, as the athlete trains the muscles of his body previous to entering the race, you not only assist in developing a nation who talk well and sing sweetly, but you assist in saving thousands of people from a premature grave to which they are otherwise inevitably doomed. Vocal physiology and systematic voice training are just as necessary as physical training is a part of the athlete's daily work.

I do not pretend to say that all who follow these suggestions will never suffer from a cold, a sore throat or an acute attack of laryngitis or pharyngitis at some time or another, but the probabilities are that 50 per cent. of the people who are obliged to consult the laryngologist now would not be obliged to do so were these suggestions rigidly enforced and observed. The most frequent and common ailments of the voice user from which one may suffer at some time or another are the following: catching cold, sore throat or relaxed throat, acute and chronic pharyngitis, chronic granular pharyngitis, elongated or relaxed uvula, tonsilitis, and acute and chronic laryngitis.

Having considered the physical necessity of vocal physiology and voice training, some remarks upon the daily life of the voice user, in order to assist in the prevention of laryngeal diseases, are quite applicable before closing this paper.

Most of our eminent authors say that a man's life is controlled, 1, by residence; 2, by ablutions; 3, by clothing; 4, by diet; 5, by exercise; 6, by amusements; and lastly, by individual habits.

1. *As to Residence.*—It is very important that a man or woman who wishes to preserve a good voice should live in well ventilated rooms. They should not sleep in the same rooms they occupy during the day. They should be ventilated by day as well as by night. Drainage should be perfect so as to prevent any exhalations from being inhaled, for its injurious effects are soon noticed upon a sensitive and congested larynx. Your residence should be situated rather high and have a southern exposure if possible. As regards climate, some require a dry and high altitude, while others feel best in a moist climate and low altitude. Some can live in smoky and dusty cities, while others must live elsewhere. This should be determined upon by the advice of your family physician and laryngologist.

2. *Ablutions.*—This is a subject much debated upon and yet no strict rules have been laid down. The following are among the best: Daily baths are generally advised. In cold weather take a hot bath, rub the body freely with a flesh brush and plenty of soap (a coal tar preparation is the best for cleansing the pores and promoting action of the skin); then sponge the body or douche it with cold water while standing in the hot, and dry the major part of the body before taking the feet out of the warm water. If there is any fear of perspiration you should lie between sheets for ten or fifteen minutes before dressing. The Turkish bath to the singer has this advantage; the inspiration of hot dry air which is so advantageous in counteracting the effects of cold, damp climates. It should be taken at least two hours after each meal. Put a wet towel on your head on entering the bath, to prevent heat stroke, palpitation, fainting, etc. Have the body shampooed lightly, and if perspiration is not active drink a glass of water. Wash the head as well as the body. Do not take a cold bath immediately afterwards, but douche first with warm water and have it gradually grow colder. Cool before dressing and keep the body and feet wrapped while cooling. Don't take a Turkish bath oftener than twice a week in winter, and once a week in summer. Cleansing the mouth and teeth with cold water before singing and speaking should be practiced regularly. Bathing the throat and back of the neck with cold water is commendable, as it renders the skin less sensitive to cold draughts of air and prevents one from catching cold easily.

3. *Clothing.*—A very great deal might be said upon so very important a subject, but I will merely touch upon some of the most important essential points: As is customary when going out to put on a wrap of some kind, in the same manner when entering a room be careful to remove it. Try to keep the temperature of your body equalized, no matter where you are or where you go. If upon the stage, and rather lightly dressed, be sure to use your wraps while waiting in the dressing rooms between the acts. The majority of singers and speakers should wear silk or flannel underwear the entire year, especially if they are inclined to suffer from rheumatism. Others think that underwear woven in combination suits, extending from the neck to the wrists and ankles, made of silk, gauze, merino and lamb's wool are the best hygienic underwear that can be worn. It is especially advisable to protect the organs of secretion where damp and sudden climatic changes predominate. Regarding the covering of the neck, no singer should wear a collar that buttons above the level of the top of the sternum. The high collar of the dude, the high and tight collars frequently worn by ladies, are a great hindrance to singers and public speakers; their tendency is to constrict the throat and prevent free movement of the laryngeal muscles, and produce congestion of the larynx and vocal cords, tonsilitis, etc., and materially interfere with all the movements of respiration.

4. *Diet.*—The two chief varieties of foods necessary to maintain life, are the nitrogenous and non-nitrogenous. The former are principally found in the meats and fats, and the latter principally in vegetables, starches, sugars, etc. Many vegetables and fruits contain nitrogen, such as apples, peas, white beans, etc., and for this reason vegetarians say we need eat no meats when all the nitrogen we need can be obtained from vegetables. Singers or speakers who do not take much exercise should eat meat sparingly, so as to prevent obesity. A singer should have an interval of about three to four hours and a speaker two hours between a full meal and the time they wish to sing or speak. Some singers or speakers become quite fatigued and tired out by the time they are half through with their evening's exercises; in such cases some beef tea or meat extracts between acts should be taken if possible; or what is still better, a raw egg seasoned with a few grains of salt and a few drops of vinegar swallowed whole fifteen or twenty minutes before using the voice, is an excellent tonic. This is exceedingly pleasant when the voice becomes dry from nervousness. Stimulants such as champagne, whisky, brandy and the malt liquors should be used very sparingly, for the reaction that follows their use is generally of such a character as to produce a congestion of the vascular supply of the pharynx, and more harm results from their use than the good that is accomplished. "Mariani" wine, made from the cocoa leaf, has many valuable testimonials from eminent actors and singers, but it also should be used with extreme caution, for we all know its active and exhilarating principle is due to cocaine, and who wants to become its slave? Avoid all foods that favor flatulence and have a tendency to interfere with the respiratory movements. All nuts and condiments, peppers, pickles, curries, etc.. which have a tendency to stimulate the vascular supply of the pharynx and larynx. At meals tea, coffee and cocoa should be drank according to the taste and digestion of the person using them. As a rule they should be discarded. Numerous carbonated effervescing waters when pure are good. Kumyss is a very refreshing and stimulating drink. The light wines, such as claret, burgundy, and light Hungarian wines, after a hard day's work are refreshing and recuperative, but total abstinence from alcoholic stimulants of any kind is the best advice I can give you.

5. *Exercise.*—Speakers and singers should not neglect their walk in the open air for an hour or two every day. This exercise is frequently neglected for fear of catching cold, but by observing their manner of dress, exercising moderately and not violently, is an essential which should never be forgotten. A want of sufficient daily exercise soon tends towards corpulency, and congestion of the various organs of the body is liable to be the result, and interfere materially with the movements of respiration.

6. *Amusements.*—Swimming, shooting, skating, lawn tennis, fencing, etc., if practiced with moderation are all advantageous. Limit the extent of all amusements to the moment that fatigue begins; if extended to the stage of exhaustion, evil results often follow.

*As to Habits.*—Cigarette smoking is a pernicious habit, especially to singers and speakers. Tobacco in all its forms should be abstained from, principally on account of the inhalation of its fumes into the lungs, and its deleterious effects upon the heart, respiratory movements, and upon the pharyngeal and laryngeal mucous membrane in general.

Each of the main points of my subject might be dwelt upon far more extensively, but having touched upon the more prominent ones, I hope that some lasting and favorable impression has been made upon your minds, and that you all may in some manner do your parts towards establishing a department of physical voice culture in our public schools and colleges, and by so doing save many thousands of human lives from a premature grave, by the prevention of many of our most common laryngeal diseases.

## NECROLOGY.

### James McCann, M.D., LL.D.

Was born fifty-seven years ago in Penn township, Allegheny county, Pa. His father served under Anthony Wayne in the war for American independence. In early boyhood he passed his summers working upon his father's farm, and the winter months as a pupil of John G. Beatty, who taught him, in addition to the public school curriculum of that time, Latin and the higher mathematics. At about thirteen years of age his father died, when he began teaching school, and became a leading member of a local debating society. Even at this early date he was a ready, fluent and earnest talker. Tiring of the monotony of country life and, like the majority of young men of his age, not knowing exactly what to do with himself, he decided upon a mercantile career, and at the age of eighteen came to Pittsburgh, where, after graduating at Duff's College, he spent several years as bookkeeper in a business house. This sedentary life became irksome to him, his health was not good, and acting upon the advice of his physician, who regarded him as a young man of promising talents, he finally decided to study medicine. With this object in view, he in 1858 entered the office of Drs. Thomas and John Dickson, Sr.

He graduated from the medical department of the University of Pennsylvania in 1863, and immediately entered the medical service of the army as assistant surgeon of the Fifth Pennsylvania Volunteers. He continued in this service until the close of the war, when he returned to Pittsburgh and began the practice of medicine with Dr. W. C. Reiter. Two years later he received the appointment of surgeon to the marine hospital, and the connection with Dr. Reiter was soon afterward dissolved.

He was next appointed one of the surgeons of the Western Pennsylvania Hospital, which position he held until a few months ago, when he resigned because of ill health, and accepted the appointment of consulting surgeon. For twenty years he has been one of the surgeons of the Pennsylvania, the Allegheny Valley, and other railroads entering this city.

He was an active and influential member of the Pittsburgh Free Dispensary from its inception, of the board of health for many years, of the Allegheny County Medical Society, of the State Medical Society, of the American Medical Association, of the American Surgical Association and of the American Association of Obstetricians and Gynecologists, but owing to ill health he was never able to attend a session of the latter.

In spite of the busy life he led, his ardent love and natural aptitude for teaching led him—in connection with his confrères of the "Mott Medical Club"—to undertake the arduous work of organizing the first medical college in western Pennsylvania. Into this work he threw all his enthusiasm, and devoted to it all his energy and influence. Caring but little for pecuniary reward, it was with him a labor of love. In September, 1886, he was elected professor of the principles and practice of surgery. This position he filled until a few months prior to his death.

DR. R. P. GORDON, of Hebron, Ky., who was crushed Tuesday evening, June 20, between a cable train and a wall of the La Salle street tunnel, died at the Alexian Brothers' Hospital. Dr. Gordon was asleep when the train entered the tunnel, and a jar threw him from his seat. He was a graduate of the Medical College of Ohio, class of 1887.

DR. THOMAS ANTISELL, of Washington, D. C., died June 14, 1893. He was born in Ireland, educated in Dublin, and a licentiate of the Royal College of Surgeons, 1839. He was for many years professor of chemistry in Georgetown Medical College, and during the civil war he had charge of one of the general hospitals at Washington. Professor Antisell had been in bad health for the last two or three years.

## ARMY AND NAVY NEWS.

### Army.

GENERAL ORDERS, No. 51.

HEADQUARTERS OF THE ARMY,
ADJUTANT GENERAL'S OFFICE,
*Washington, June 24, 1893.*

By direction of the Secretary of War, upon the recommendation of the Surgeon General of the Army, an Army Medical School will be established in the city of Washington for the purpose of instructing approved candidates for admission to the Medical Corps of the Army in their duties as medical officers.

The course of instruction will be for four months, and will be given annually at the Army Medical Museum, in Washington City, commencing on the 1st day of November.

Four professors will be selected from among the senior medical officers of the Army stationed in or near the city of Washington, and as many associate professors as may be required to give practical laboratory instruction in the methods of sanitary analyses, microscopical technique, clinical microscopy, bacteriology, urine analysis, etc.

The faculty of the Army Medical School will consist of—

1. A President of the Faculty, who shall be responsible for the discipline of the school and who will deliver a course of lectures upon the duties of medical officers in war and peace (including property responsibility, examination of recruits, certificates of disability, reports, rights and privileges, customs of service, etc.).
2. A Professor of Military Surgery (including the care and transportation of wounded).
3. A Professor of Military Hygiene (including practical instruction in the examination of air, water, food and clothing from a sanitary point of view).
4. A Professor of Clinical and Sanitary Microscopy (including bacteriology and urinology).

BY COMMAND OF MAJOR GENERAL SCHOFIELD:

R. WILLIAMS,
*Adjutant General.*

ARMY MEDICAL SCHOOL. SURG. GEN. STERNBERG SELECTS THE OFFICERS FOR ITS FACULTY.—Surg. Gen. Sternberg has completed his selection of the officers who will compose the faculty of the new army medical school to be established in this city. Col. Charles Alden, lately medical director of the Department of Dakota, in addition to his duties as deputy surgeon general, will act as president of the school. Lieut. Col. William H. Forwood, deputy surgeon general, now on duty at the District Soldiers' Home, will be professor of military surgery. Maj. John Billings, who is now in charge of the Army Medical Museum, will be professor of military hygiene, and Capt. Walter Reed, assistant surgeon, now on duty at St. Paul, will have charge of the microscopical work.

### Navy.

*The Army and Navy Register* of June 24, 1893, says "Surgeon General Tryon has taken another step toward the formation of his school for instruction for Naval Surgeons at New York by securing the detail of Passed Assistant Surgeon D. M. Guiteras to duty as assistant to the director in charge of the naval laboratory and also as instructor in the new school. Medical Director Bloodgood, now in charge of the laboratory will retire in August and will be succeeded by Medical Director Wells, at present attached to the Naval Hospital in the city (Washington D. C.). The corps of instructors in addition to Dr. Guiteras will include the Naval Surgeons who are members of the Examining board at New York."

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SATURDAY, JULY 8, 1893.

## EDITORIAL CHANGE.

As heretofore announced, DR. J. C. CULBERTSON, for the past two years editor of this journal, has returned to Cincinnati and resumed editorial management of the *Lancet and Clinic*. THE JOURNAL editorial staff and the employés of the office extend to him their best wishes for his continued success.

The undersigned has been elected editor, and therefore tendered his resignation as trustee July 1, 1893. JOHN B. HAMILTON.

## THE VISIT OF MR. ERNEST HART.

The visit of the venerable editor of the *British Medical Journal* to America, and his meeting with the members of the American Medical Association at Milwaukee, are events worthy of mention. The cordial and enthusiastic welcome MR. HART has everywhere received is evidence of the friendly and fraternal feeling entertained in the United States for our British brethren, as represented in the person of MR. HART, scarcely less than for his own sake. To the Association and its JOURNAL the coming of MR. HART can not fail to be of advantage, for, by invitation of the board of trustees, he kindly appeared before them and explained in detail the method of conducting the *British Medical Journal*—a method whereby that publication has been raised from a weekly issue of 2,000 copies to 17,000 copies, and has now a position so secure that nothing can possibly overturn it.

When MR. HART assumed editorial charge of the *Journal*, it had been in existence fifteen years, and he was and is its eleventh editor. This was twenty-seven years ago, and in all those years MR. HART never once departed from his fixed policy to make the *Journal* "each week a journal of the week," and that the *Journal* was primarily "published for the benefit of those who *read*, rather than for the benefit of those who write."

When asked how best to improve our own excellent JOURNAL, MR. HART said that he thought its future lay in the direction of increasing the membership of the Association, and said in effect that as a stream could rise no higher than its source, so THE JOURNAL could not be much better or higher than the sources of its inspiration. Better papers, more condensation, and a larger waste basket would naturally follow a more extended membership. His own opinion was expressed that with so many more physicians in the United States than in any other country, we should have the strongest Association and the best journal. He could see no valid reason why THE JOURNAL should not speedily become phenomenally successful, if the members of the Association so willed it. The labor was great, but the reward would be commensurate.

The details of MR. HART's suggestions relative to the general management of the British *Journal* would be manifestly out of place here, but it is sufficient to say that they were instructive and interesting; being the mature judgment of one best qualified by experience to speak instructively on the subject.

If the members of the American Medical Association will act on the hint thus frankly given, and the Association become thereby stronger and more powerful each year, much will be due our distinguished friend, MR. ERNEST HART of London.

## AIMS AND PURPOSES OF THE ARMY MEDICAL SCHOOL.

SURGEON GENERAL STERNBERG has recently obtained the sanction of the Secretary of War to a proposition that will be of inestimable value to medical graduates who may enter the army, and will, no doubt, have an important reflected influence on general medical education. Up to this year our young medical officers, assigned to duty as soon as appointed, learned by unpalatable experience that their medical curriculum failed to qualify them for the position of sanitary officers. Their knowledge of sanitary chemistry and bacteriology, of ventilation, heating, drainage, sewerage, plumbing, and kindred subjects, was by no means of that practical character that would warrant them in dealing as experts with questions that are of frequent occurrence in the army, where every point having a bearing on the physical well-being of the soldier is now submitted to the medical officer for his opinion and recommendation. The establishment of an army medical school has been authorized for the purpose of instructing approved candidates for admission to the medical corps in their duties as medical officers. The course of four months will comprise lectures on their duties in war and peace, the care and transportation of the wounded, military hygiene, and clinical and sanitary microscopy, with laboratory instruction in the methods of sanitary analysis, microscopical technique, clinical microscopy, bacteriology, etc.

The young medical officer having shown that he has profited by this course, is assigned to a military post for duty. He can not, however, feel satisfied that he is yet secure in his position, for the examination for appointment which he has undergone serves only to select the individuals that are to be educated for the service. It admits the passed candidate only to a probationary service of five years as a lieutenant or subaltern, the first four months of which is passed at the school and the remainder on duty, usually under a senior officer of his department. At the end of this time an examination is required by law to demonstrate the fitness of the officer for promotion to a captaincy. The special subjects at this examination are those relating to the practical duties of a medical officer; as an officer of the army, and as an officer of the medical department; such as army regulations and orders, hospital corps, administration and drill, the organization and management of hospitals—post, field and general; the sanitation of camps and barracks, and the care of the wounded in battle.

Having shown himself to be an educated and well qualified military officer and sanitarian, his position may be considered secure. It is true, he has again to submit himself to the scrutiny of examiners prior to receiving his majority, but this investigation is usually restricted to determining whether he has kept up with the advance of professional knowledge; and this will hereafter be less of an ordeal for captains of the medical department than it has been, for the surgeon general has decided on placing those members of the corps who are in expectation of this examination on duty as attending surgeons in such cities as New York, Chicago, Philadelphia, Boston etc., where they will have opportunity of seeing city hospital practice and attending society meetings and lectures.

For many years it has been a grievance of medical officers that they are ordered up for examination after years of service at isolated posts where they have been completely removed from the current of medical progress. These gentlemen will appreciate **GENERAL STERNBERG**'s consideration for their professional betterment, and the educational standard of the corps must of necessity be improved by this arrangement, for the experience of the senior medical officers who have heretofore held these positions, will be utilized to better advantage at large military posts where it will be of benefit to the subaltern officers who are there serving.

After this examination for his majority, the relations of the army medical officer, if he have any, to examining boards become changed; he takes his place upon them, formulating his knowledge to play the rôle of examiner.

By this system the medical officers of the army will be kept up with the times in all matters of scientific and professional thought, instead of dropping into the ruts which so often confine the holder of a life position to the beaten tracks of a profitless conservatism.

## THE ACTION OF ALKALIES ON HUMAN GASTRIC DIGESTION.

The frequency with which bicarbonate of soda is employed in gastric affections renders any contribution that enhances our knowledge of its action of interest to the profession. **DR. G. LINOSSIER** and Dr. **G. LEMOINE** have published in the June number of the *Archives Générales de Médicine* a valuable paper detailing the results of certain observations regarding the action of bicarbonate of soda and of carbonate of lime in a case of merycismus. Test meals consisting of 80 grams of bread, 80 grams of meat, and 250 grams of water were eaten by the patient, and every hour samples of chyme were obtained from the mouth into which it entered by the process of rumination. Under ordinary conditions in this patient the total acidity of the chyme was slightly pronounced, diminishing from the first to the third hour after a meal; the hydrochloric secretion was also sensibly inferior to normal, and all the usual tests showed that there existed a marked insufficiency of the gastric secretion.

The patient was then placed upon treatment of bicarbonate of soda, administered in doses varying from 7½ grains to 160 grains, and given in one of three ways: in the first, bicarbonate of soda was taken one hour before the test meal; in the second, it was taken at the commencement of or immediately before the meal: in the third, one hour after the meal.

Careful analyses of the gastric contents showed that bicarbonate of soda, in large or small doses, is an excitant of gastric secretion. The excitation of the secretion has for its first effect a saturation of the alkalinity that was always perceptible in the first analysis made after ingesting the drug in doses of 150 grains. When the dose of bicarbonate of soda is small the excitation occurs after the saturation of the alkalinity, and provokes a slight and transient increase of hydrochloric acid in the chyme. If the dose is medium the excitation is more prolonged, the maximum of the proportion of hydrochloric acid in the chyme being increased although attained more slowly. If the dose is strong the secretory energy of the mucosa is exhausted in antagonizing the alkalinity and the normal proportion of hydrochloric acid may not be attained when the gastric contents pass into the intestine. The maximum proportion of hydrochloric acid in the chyme is attained in two hours after a dose of 7½ grains, in three hours after a dose of 15 grains, and in four hours after a dose of 75 grains.

The production of the organic acids of fermentation is favored by the administration of bicarbonate of soda; these acids with the hydrochloric acid contributing to saturate the alkalinity. Their production is also prolonged when the normal acidity is exhausted.

The excitant action of bicarbonate of soda on the gastric secretion is manifested in the greatest intensity when it is administered one hour before the meal; 15 grains acting as a feeble, 75 grains as a medium, and 150 grains as a strong dose. The first mentioned dose was the only one in the experiments that diminished the formation of the acids of fermentation.

At the commencement of a meal 7½ grains acts as a feeble, 15 grains as a medium, and 75 grains as a strong dose; though the soda given at this time suspends the secretion of pepsin.

Administered one hour after a meal the soda exercised a transient saturating action that was not followed by gastric excitation if given in doses of 30 grains; a more prolonged and exciting action being attained by a dose of 75 grains.

Carbonate of lime seems to act pretty much like bicarbonate of soda, as far as saturation of the gastric juice is concerned. A dose of 75 grains has seemed to be followed by a period of excitation, but the quantity of hydrochloric acid is not secreted in a free state as it is when the soda is administered. Furthermore, when the bicarbonate of soda has been administered for some time, its action is prolonged beyond the day when it was last taken; this action being explained by an excitation and prolongation of the secretory activity.

The administration of this drug is therefore indicated in those cases in which there is insufficiency of the gastric secretion (gastric hyposthenia), and it should be taken a certain time before the meal so that there may be a saturation of the alkalinity; and when the food enters the stomach it finds itself in immediate contact with a gastric mucosa in a state of secretory excitation. Prescribed just before meals it temporarily suspends digestion, provokes acid fermentation, and hinders the secretion of pepsin. In hyperchlorhydria, bicarbonate of soda may prove a double edged sword if employed during the time of digestion; because while very serviceable in diminishing the pain when it momentarily saturates the gastric hyperacidity, yet unskillfully employed there is the risk of increasing the secretory excitation of a mucosa already over excited. In such a condition it should be given in a small dose repeated as often as necessary to semi-saturate the acidity and to quiet the pain.

# DOMESTIC CORRESPONDENCE.

## Epidemic of Typhoid Fever.

To the Editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

*Dear Doctor*:—In compliance with your request of June 18, I return the newspaper clipping relative to the epidemic of typhoid fever in Ironwood, Mich., a town of about 12,000 inhabitants, and send the following statement on that subject:

I think the newspaper clipping is wrong in stating that "the city engineer had been obliged to leave the town in order to save himself from being killed." Probably it was the secretary of the water company, who has vigorously combated the idea that the disease was caused by the water supplied by the company. It is correct in stating that the armory has been taken for a city hospital, and that the schools are closed.

TYPHOID FEVER EPIDEMIC SPREADING.—*Eight Dying Daily at Ironwood, Mich., and the Physicians Incapacitated.*—Ironwood, Mich., June 17.—[Special]—The epidemic of typhoid fever is gaining ground. There are nearly 400 cases now, and during the last ten days the deaths have averaged eight a day. The armory and other available buildings have been turned into hospitals. All the schools are closed. Physicians are falling sick from overwork and loss of sleep, and patients can not get proper treatment. The city engineer has been obliged to leave the town to save himself from being killed by infuriated people who believe that his remissness is partly responsible for the present condition of affairs. —*Chicago Tribune*, June 18.

The health officer of Ironwood reported, for the week ending May 20, fifteen cases of typhoid fever taken sick, there having been no case reported at the beginning of the week; for the week ending May 27, thirty new cases; for the week ending June 3, thirty new cases; for the week ending June 10, 125 (estimated) new cases. Up to that time only six deaths were reported. June 11 and 12 I was in Ironwood, investigating the cause of the outbreak. The disease was so widespread and the onset so sudden that I had to look for some unusual cause of typhoid which commenced to act a few days previous to the occurrence of the first cases. Several alleged causes were urged by the physicians and citizens of Ironwood whom I interrogated: 1 the general water supply, which was obtained from a small stream, the Montreal river; 2, the water from wells, to which in years past the autumnal outbreaks of typhoid have been traced; 3, the digging of filth saturated soil for the laying of water mains and sewers; 4, the stirring up and removal this spring of great quantities of filth which accumulated during the winter; 5, the present filthy condition of some gutters and alleys; 6, atmospheric influences, alleged to have caused the fever in neighboring localities; 7, some influence connected with the Ironwood high school. No such sudden change in any of these conditions as would account for the epidemic was pointed out to me or could, at first, be found.

Having in mind the fact that typhoid fever is most frequently spread by means of the drinking water, I visited the pumping station of the general water supply, and at once noticed that recently there had been a very unusual overflow of the locality. Logs had been floated all around the building, and one rested near the reservoir for receiving the filtered water, and from which the water is supplied to the two cities, Ironwood, Mich., and Hurley, Wis. I noticed that the privy for the use of the engineer and family had been floated about, and not carried far down the stream, and the excreta under it had been nearly all washed away.

The water line showed that the water had been higher than the first floor of the pumping house, and within a few inches of the fire in the furnaces. I learned that the reservoir had been overflowed, that the intake pipe had been so clogged as to be useless for several days; it then being impossible to filter the water, a break had been made in the reservoir on the side toward the privy, which was on the down stream side but only about thirty-five feet distant, and the foul water of the overflow, probably contaminated with human excreta, allowed to fill the reservoir; and this was pumped into the mains to supply Ironwood and Hurley. As nearly as I could learn, this was between the 10th and 15th of May. The first person taken sick in this outbreak, was May 13. The greatest number yet officially reported were taken sick during the week ending June 10. It does not follow that all the cases were caused during the few days between May 10 and 15, because filth from the same source was contaminating the water in the reservoir as late as the last day of my visit, June 11. A sample of the contaminating water, sent by me to the State Laboratory of Hygiene, Ann Arbor, was reported by the director, Prof. Vaughan, to contain pathogenic microörganisms which caused the death of white rats into which they had been injected, the rats then having inflamed intestines and enlarged spleens, as did persons whom I saw sick at Ironwood.

My recommendation was that for the present all the water used for drinking and culinary purposes should be boiled, that the pumping station should be provided with filters having the capacity of at least three times that of the present plant, that no water should be pumped into the mains except it be filtered, that the reservoir for filtered water be cleaned out, cemented inside and out, so as to be water tight, that the stand-pipe and pipes throughout the city be emptied, and clean water pumped through to wash them out.

The stand-pipe was nearly emptied when I was there. Since my return I have learned that several tons of filth was found in the stand-pipe, including dead fish and crabs.

Although this outbreak seems to have been caused by the general water supply, and the importance of disinfecting the typhoid excreta has been urged upon the inhabitants, it seems almost certain that the wells throughout the city will be contaminated and soon become a source of danger, especially in the autumn when the water becomes low, unless extraordinary efforts are made to prevent it. Hundreds of pamphlets such as I send herewith, have been sent to Ironwood from this office and are being distributed, in order to teach the people the modes of causation and restriction of typhoid fever; notices to *boil the water* have been posted up by the health officer, and it is earnestly hoped that the disease can be restricted.

Very respectfully,

Henry B. Baker, *Sec'y State Board of Health.*

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# MEDICAL PRACTICE ACT.

## The New Medical Law of Pennsylvania.

### AN ACT

To establish a Medical Council and three State Boards of Medical Examiners, to define the powers and duties of said Medical Council and said State Boards of Medical Examiners, to provide for the examination and licensing of practitioners of medicine and surgery, to further regulate the practice of medicine and surgery, and to make an appropriation for the Medical Council.

Whereas, The safety of the public is endangered by incompetent physicians and surgeons, and due regard for public health and the preservation of human life demands that none but competent and properly qualified physicians and surgeons shall be allowed to practice their profession;

Section 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same:* That there shall be established a Medical Council of Pennsylvania, consisting of the lieutenant governor, the attorney general, the secretary of internal affairs, the superintendent of public instruction and the president of the State board of health and vital statistics, and the presidents of the three State boards of medical examiners provided for in this act.

Sec. 2. The said council shall be known by the name and style of the Medical Council of Pennsylvania, and may make and adopt all necessary rules and regulations and by-laws not inconsistent with the constitution and laws of this commonwealth or of the United States, and shall have power to locate and maintain an office within this State for the transaction of business. Five members of the said council shall constitute a quorum for the transaction of business.

Sec. 3. The said council shall organize at Harrisburg within ten days from the date of the organization of three boards of medical examiners, and shall elect from its own number a president and a secretary, who shall also act as treasurer, both of whom shall hold their offices for one year or until their successors are chosen.

Sec. 4. The members of the said council shall receive no salary, except the secretary and treasurer, who shall receive a salary of not over five hundred dollars, and who shall file with the president of the council a bond in the sum of one thousand dollars conditioned for the faithful performance of his duties. The necessary expenses of the said council shall be paid out of the appropriation made in section sixteen of this act, and any balance remaining from the appropriation after the disbursements herein specified shall be paid into the treasury of the commonwealth.

Sec. 5. The said medical council shall hold two stated meetings in each year at Harrisburg, and may hold special meetings at such times and places as it may deem proper. It shall supervise the examinations conducted by the three State boards of medical examiners of all applicants for license to practice medicine and surgery in this Commonwealth, and shall issue licenses to practice medicine and surgery to such applicants as have presented satisfactory and properly certified copies of licenses from State boards of medical examiners or State boards of health of other States as provided for in section thirteen of this act, or as have successfully passed the examination of one of the three State boards of medical examiners, but all such examinations shall be made by the State boards of medical examiners established in section six of this act. And the said medical council shall have no power, duty or function except such powers, duties and functions as pertain to the supervision of the examinations of applicants for licenses to practice medicine and surgery, and to the issuing of licenses to such applicants as have successfully passed the examination of one of the State boards of medical examiners, or have presented satisfactory and properly certified copies of licenses from State boards of medical examiners or State boards of health of other States as provided for in section thirteen of this act.

Sec. 6. It is further enacted that from and after the first day of March, Anno Domini one thousand eight hundred and ninety-four, there shall be and continue to be three separate boards of medical examiners for the State of Pennsylvania, one representing the Medical Society of the State of Pennsylvania, one representing the Homœopathic Medical Society of the State of Pennsylvania, one representing the Eclectic Society of the State of Pennsylvania.

Each board shall consist of seven members, and each of said members shall serve for a term of three years from the first day of March next after his appointment, with the exception of those first appointed, who shall serve as follows, namely: Two of each board for one year, two of each board for two years, and three of each board for three years from the first day of March, Anno Domini one thousand eight hundred and ninety-four.

The Governor shall appoint the members of said boards of examiners respectively from the full lists of the members of said medical societies which lists shall on or before the first day of January, one thousand eight hundred and ninety-four, and annually thereafter, be transmitted to the Governor, under the seal and signed by the secretary of the society so nominating. From these lists of nominees respectively, the Governor shall, during the month of January, Anno Domini one thousand eight hundred and ninety-four, appoint three separate boards of medical examiners, each board to be composed exclusively of members of the same medical society. In case of failure of any or all of said medical societies to submit lists as aforesaid, the Governor shall appoint members in good standing of the corresponding society or societies entitled to nominate, without other restriction. Each one of the said appointees must be a registered physician in good standing, and shall have practiced medicine or surgery under the laws of this State for a period of not less than ten years prior to such appointment.

The Governor shall fill vacancies by death or otherwise for unexpired terms of said examiners, from the respective lists submitted by the said medical societies, and may remove any member of said boards for continued neglect of the duties required by this act, or on recommendation of the medical society of which said members may be in affiliation, for unprofessional or dishonorable conduct.

The Governor shall, in his first appointments, designate the number of years for which each appointee shall serve. The appointments of successors to those members whose term of office will expire on the first day of March of each year shall be made by the Governor during the month of January of each year, upon the same conditions and requirements as hereinbefore specified, with reference to the appointment of three separate examining boards, each to be composed exclusively of members of the same medical school and society as hereinbefore provided.

Sec. 7. Said boards shall be known by the name and style of Boards of Medical Examiners of the State of Pennsylvania. Every person who shall be appointed to serve on either of said boards shall receive a certificate of appointment from the Secretary of the Commonwealth.

Each of said boards shall be authorized to take testimony concerning all matters within its jurisdiction, and the presiding officer for the time being of either of said boards, or of any of the committees thereof, may issue subpœnas and administer oaths to witnesses. Each of said boards of examiners shall make and adopt all necessary rules, regulations and by-laws not inconsistent with the constitution and laws of this State or of the United States, whereby to perform the duties and transact the business required under the provisions of this act, said rules, regulations and by-laws, to be subject to the approval of the Medical Council of Pennsylvania established by this act.

Sec. 8. From the fees provided by this act the respective boards may pay not to exceed said income all proper expenses incurred by its provisions, and if any surplus above said expenses shall remain at the end of any year it shall be apportioned among said examiners pro rata, according to the number of candidates examined by each. Provided, That the Medical Council shall keep separate accounts of all fees received from physicians applying for licenses to practice medicine and surgery, and shall not devote any such fees to the uses of the council, or to the uses or remuneration of any other examining board than that of the society with which the physician who pays the fee wishes to be affiliated.

Sec. 9. The first meeting of each of the examining boards respectively, shall be held on the first Tuesday of April, one thousand eight hundred and ninety-four, suitable notice in the usual form being given with the notice of their appointment by the Secretary of the Commonwealth to each of the members thereof, specifying the time and place of meeting.

At the first meeting of each of the boards respectively, an organization shall be effected by the election from their own membership, of a president and secretary. For the purpose of examining applicants for license each of said boards of medical examiners shall hold two or more stated or special meetings in each year, due notice of which shall be made public at such times and places as they may determine. At said stated or special meetings a majority of the members of the board shall constitute a quorum thereof, but the examination may be conducted by a committee of one or more members of the board of examiners duly authorized by said boards.

Sec. 10. The several boards of medical examiners shall not less than one week prior to each examination submit to the Medical Council of Pennsylvania, questions for thorough examinations in anatomy, physiology, hygiene, chemistry, surgery, obstetrics. pathology, diagnosis, therapeutics, practice of medicine, and materia medica. From the lists of questions so submitted, the council shall select the questions for each examination and such questions for each examination shall be the same for all candidates except that in the departments of therapeutics, practice of medicine and materia medica the questions shall be in harmony with the teachings of the school selected by the candidate.

Sec 11. Said examinations shall be conducted in writing in accordance with the rules and regulations prescribed by the Medical Council of Pennsylvania and shall embrace the subjects named in section ten of this act. After each such examination the board having charge thereof shall without unnecessary delay act upon the same. An official report of such action signed by the president, secretary and each acting member of said board of medical examiners stating the examination average of each candidate in each branch, the general average and the result of the examination, whether successful or unsuccessful, shall be transmitted to the medical council. Said report shall embrace all the examination papers, questions, and answers thereto. All such examination papers shall be kept for reference and inspection for a period of not less than five years.

Sec. 12. On receiving from any of said boards of medical examiners such official report of the examination of any applicant for license the medical council shall issue forthwith to each applicant who shall have been returned as having successfully passed said examination, and who shall have been adjudged by the medical council to be duly qualified for the practice of medicine, a license to practice medicine and surgery in the State of Pennsylvania. The medical council shall require the same standard of qualifications from all candidates except in the departments of therapeutics, practice of medicine, and materia medica, in which the standard shall be determined by each of the boards respectively. Every license to practice medicine and surgery issued pursuant to this act shall be subscribed by the officers of the medical council and by each medical examiner who reported the licentiate as having successfully passed said examinations. It shall also have affixed to it by the person authorized to affix the same, the seal of the Commonwealth.

Before said license shall be issued it shall be recorded in a book to be kept in the office of the medical council and the number of the book and page therein containing said recorded copy shall be noted upon the face of said license. Said records shall be open to public inspection under proper restrictions as to their safe keeping and in all legal proceedings shall have the same weight as evidence that is given to the conveyance of land.

Sec. 13. From and after the first day of July, Anno Domini, one thousand eight hundred and ninety-four, any person not theretofore authorized to practice medicine and surgery in this State, and desiring to enter upon such practice, may deliver to the secretary of the medical council upon the payment of a fee of twenty-five dollars, a written application for license together with satisfactory proof that the applicant is more than twenty-one years of age, is of good moral character, has obtained a competent common school education, and has received a diploma conferring the degree of medicine from some legally incorporated medical college of the United States, or a diploma or license conferring the full right to practice all the branches of medicine and surgery in some foreign country. Applicants who shall have received their degree in medicine after the first day of July, one thousand eight hundred and ninety-four, must have pursued the study of medicine for at least *three* years, including three regular courses of lectures in different years in some legally incorporated medical college or colleges prior to the granting of said diploma or foreign license, and after the first day of July, eighteen hundred and ninety-five, such applicants must have pursued the study of medicine for at least four years including three regular courses of lectures in different years in some legally incorporated medical college or colleges prior to the granting of said diploma or foreign license. Such proof shall be made if required upon affidavit. Upon the making of said payment and proof the medical council if satisfied with the same shall issue to said applicant an order for examination before such one of the State boards of medical examiners as the applicant for license may select. In case of failure at any such examination the candidate after the expiration of six months and within two years shall have the privilege of a second examination by the same board to which application was first made without the payment of an additional fee. And it is further provided, That applicants examined and licensed by State boards of medical examiners or State boards of health of other States on payment of a fee of fifteen dollars to the medical council, and on filing in the office of the medical council a copy of said license certified by the affidavit of the president or secretary of such board, showing also that the standard of acquirements adopted by said State board of medical examiners or State board of health is substantially the same as is provided by sections eleven, twelve and thirteen of this act shall without further examination receive a license conferring on the holder thereof all rights and privileges provided by sections fourteen and fifteen of this act.

Sec. 14. From and after the first day of March, Anno Domini, one thousand eight hundred and ninety-four, no person shall enter upon the practice of medicine or surgery in the State of Pennsylvania unless he or she has complied with the provisions of this act and shall have exhibited to the prothonotary of the court of common pleas of the county in which or she desires to practice medicine or surgery, a license duly granted to him or her as hereinbefore provided, whereupon he or she shall be entitled upon the payment of one dollar to be duly registered in the office of the prothonotary of the court of common pleas in the said county and any person violating any of the provisions of this act shall be guilty of a misdemeanor and upon conviction thereof in the court of quarter sessions of the county wherein the offense shall have been committed, shall pay a fine of not more than five hundred dollars for each offense.

Sec. 15. Nothing in this act shall be construed to interfere with or punish commissioned medical officers serving in the army or navy of the United States, or in the United States Marine Hospital service while so commissioned, or medical examiners of relief departments of railroad companies while so employed or any one while actually serving as a member of the resident medical staff of any legally incorporated hospital, or any legally qualified and registered dentist exclusively engaged in the practice of dentistry nor shall it interfere with or prevent the dispensing and sale of medicine or medical appliances by apothecaries or pharmacists or interfere with the manufacturers of artificial eyes, limbs or orthopedic instruments of any kind from fitting such instruments on persons in need thereof, or any lawfully qualified physicians and surgeons residing in other States or countries meeting registered physicians of this State in consultation or any physician or surgeon residing on the border of a neighboring State, and duly authorized under the laws thereof to practice medicine and surgery therein, whose practice extends into the limits of this State provided, That such practitioner shall not open an office or appoint a place to meet patients or receive calls within the limits of Pennsylvania, or physicians duly registered in one county of this State called to attend cases in another county but not residing or opening an office therein. And nothing in this act shall be construed to prohibit the practice of medicine and surgery within this Commonwealth by any practitioner who shall have been duly registered before the first of March, Anno Domini one thousand eight hundred and ninety-four, according to the terms of the act entitled, "An act to provide for the registration of all practitioners of medicine and surgery," approved the eighth day of June, Anno Domini, one thousand eight hundred and eighty-one, and one such registry shall be sufficient warrant to practice medicine and surgery in any county in this Commonwealth.

Sec. 16. The sum of two hundred thousand dollars is hereby appropriated out of any moneys in the State treasury not otherwise appropriated for the salary of the secretary and treasurer of said medical council, and the necessary expenses of said council one thousand dollars thereof for the year beginning January first, one thousand eight hundred and ninety-four, and one thousand dollars thereof for the year beginning January first, one thousand eight hundred and ninety-five.

Sec. 17. All acts or parts of acts of Assembly inconsistent herewith shall be and are hereby repealed.

## SELECTIONS.

On a new Form of Osteo-myelitis.—At the Society of Surgery, June 14, M. Berger reported the case of a young woman of sixteen years in whom chronic osteo-myelitis rapidly progressed to total necrosis of the bone, at the beginning of the menstrual epoch but with suppression. He was obliged to disarticulate the limb. The beginning showed itself by dull pain in the left humerus, very much increased during the day. The swelling came on slowly. There was not during the course of the disease acute febrile symptoms at any stage.

When the patient entered the hospital, there was noted a fusiform swelling and a deep fluctuation. On account of the continued absence of pain, osteo-sarcoma was suspected. Nevertheless, the diagnosis of osteo-myelitis was made. An incision carried through the periosteum, which was much thickened, gave exit to some pus. As there is no laboratory at the Lariboisière, no bacteriological examination of the pus was made. It was found that the bone was denuded throughout its circumference and nearly the whole length. Opening the medullary canal showed the lumen occupied by black marrow, and it was judged there was total necrosis. There was no pus. The operation was followed by a short febrile reaction, and ten days after there was spontaneous fracture. Immobilization was practiced, but soon the soft parts became infiltrated and blanched; there was considerable fever. It was then decided to disarticulate the humerus. The bone was comminuted and the fragments bathed in pus.

The foregoing case does not accord with the symptoms assigned to acute osteo-myelitis, which is always accompanied by acute heat. Chronic osteo-myelitis accompanied by hyperostosis, subperiosteal abscess, often developing at the menstrual epoch with suppression, and without local heat. —*Progrès Medical.*

Tamponade of the Uterus.—Dr. H. C. Coe said: The profession has hitherto shown almost a superstitious fear of invading the uterine cavity—a fear which was fast passing away since we had learned that it was sepsis and not trauma that created most mischief in gynecological treatment.

The use of the intra-uterine tampon was indicated, first, to control hemorrhage: (*a*) from the non-puerperal womb after removal of growths; (*b*) from the puerperal uterus either after abortion or at term. Second, to prompt uterine contraction: (*a*) of the non-puerperal uterus after removal of growths, etc., the organ remaining, as in certain puerperal cases, in a state of subinvolution; (*b*) in puerperal cases where placing a foreign body in the uterus stimulated it more powerfully than astringent injections. Third, to promote healthy granulation of the raw surface after curetting. Fourth, to secure permanent dilatation of the canal in order to promote drainage.

He related briefly the histories of some cases illustrating the value of the uterine tampon under these various conditions. The first was a case of large sessile fibroid which he removed by the scissors, and controlled severe hemorrhage promptly by introducing iodoform gauze within the cavity. The second case was one of accidental hemorrhage during labor at term, to which he was called in consultation. The doctor had controlled the bleeding by keeping the hand within the uterus an hour and a half, but on removing it the bleeding recommenced. Dr. Coe was unable, on arrival, to feel the pulse. Gauze was introduced into the uterus and saline solutions were injected into the circulation. The hemorrhage was thus controlled, but the patient died after several days of pelvic peritonitis.

The next case related was one of endometritis fungosa, the hemorrhage from which was controlled for some months by curetting with the sharp instrument and applications of astringents. On the patient's return she was again curetted with the sharp curette, the cavity irrigated, a tampon of iodoform gauze was left in three days and replaced two or three times a week for two weeks by fresh gauze, after which the patient became pregnant.

The fifth case related was one of complete atrophy of the uterus and post-partum hemorrhage. The child was taken out with forceps; the post-partum hemorrhage was controlled by introducing gauze, which induced contraction. The patient was in desperate condition, but made a good recovery.

Some seemed to think the gauze interfered with drainage and healing, but he was unable to understand the arguments on which the view was based. It was the cavity of the uterus, not the cervix, which was tamponed; only a strip of the gauze protruded from the os.

The gauze is kept in two forms; the one in pieces of good size for post-partum cases, the other in narrow strips for non-puerperal cases. In the former the gauze had to be put into the uterus by the handful at a time, while in the latter it was introduced by forceps. It could be safely left in two or three days. The same preparation of the patient and precautions should be observed as in abdominal surgery. Reference was made to the advantages of the gauze over stem pessaries, etc. It was unirritating, antiseptic, could easily be changed at one's office, etc.—*American Journal of Obstetrics.*

Europhen.—In July, 1891, Eichoff gave a favorable account of the action of europhen, which is the iodide of isobutylorthocresol. It is an amorphous yellow powder, with a slightly aromatic smell, not soluble in water and glycerin, but very soluble in alcohol, ether and chloroform. It is soluble too in collodion and oil. Eichoff reported a series of cases in which he had used it with great advantage in ulcers for the most part specific, scrofuloderma and lupus exedens. In some cases he employed simply powdered europhen, in others he used ointments of various kinds, containing usually 5 per cent. of europhen. No good consequence followed its use in gonorrhœa, psoriasis, parasitic diseases and urticaria.

He also injected a 1.5 per cent. solution of europhen in olive oil, each injection containing one-fourth of a grain. This gave rise to no pain or local troubles. After the injection of larger doses, patients complained of pain in the head and liver, and he advised that at first the smaller doses should be used, though afterwards the amount might be increased. The injections of europhen were chiefly used in syphilitic affections and lesions, and seemed to be of value.

In the *Therap. Monat.* for January, 1893, Eichoff points out that many observers have confirmed his views as to the utility of europhen. After further experience, however, he is inclined to abandon its subcutaneous use in syphilitic ailments, since the benefit it causes is only temporary, but as an external application in syphilitic soft ulcer he finds it of very great advantage. After washing the ulcer he applies the powder, covering the whole with wadding. Where the surface of the ulcer is raised, he first touches it with nitrate of silver. He points out that it must not be used with or soon after a sublimate solution, for then irritation is set up, owing to the iodide of mercury formed. In scrofuloderma and lupus exedens he used either a 3 per cent. ointment or the powder, and found cicatrization follow It was of no service, however, where the lupus and scrofulous surfaces were more or less covered with epidermis. He says also that it is of use in the gonorrhœa of women with ulcerations in the vagina and on the cervix uteri.

He looks upon europhen, then, as a substitute for iodoform, over which it has the advantage of causing no injurious effects after absorption, and having no unpleasant smell.—*Medical Chronicle.*

Hydrastin in Epilepsy.—Kisseleff has studied the action of hydrastin in epilepsy, and after experiments upon dogs and guinea pigs, has arrived at the following conclusions:

1. The excitability of the cerebral cortex is lowered in proportion to the increase of the dose administered; but it will not fall to 0 cent., even with fatal doses of hydrastin.
2. Hydrastin possesses a cumulative action, and provokes a permanent lessening of the excitability.
3. While the excitability of the white matter was fully diminished, it was not so pronounced as that of the gray matter.
4. The paroxysms of epilepsy of guinea pigs are favorably influenced by hydrastin.
5. It has the same effect upon toxic epilepsy (produced by nux vomica or strychnia).
6. Hydrastin diminishes cerebral excitability of the cerebral cortex, and also in cases of intense cerebral hyperæmia artificially provoked.

From a clinical point of view, Kisseleff has obtained good results in some cases of epilepsy treated by hydrastin in doses of 5 centigrams a day, but the small number of cases observed does not permit us to form definite conclusions.—*Jour. de Med. de Paris*, June 18, 1893.

Obesity and Life Insurance.—M. Kirsch has examined the condition of obesity from a life insurance point of view, and has reached the following conclusions:

1. Medium obesity does not in general give a reason for refusal to give an ordinary policy of insurance.
2. If obesity is hereditary; if, in the antecedents of the family of the candidate there has existed saccharine diabetes or cerebral hæmorrhage the examiner should be very circumspect.
3. If the obesity is very great, more prudence is necessary, and the heart and the urine should be examined with extreme care, as a very obese man is like a colossus upon feet of clay.' Irregularity of the pulse or pronounced slow heart are always very bad prognostics.
4. When great obesity coincides with chronic alcoholism the chances of life are very much reduced.—*Wiener Med. Presse.*

Valzine.—A chemist of Berlin has discovered a new substance, *valzine* which he thinks will replace saccharine. Its sweetening power is a little less than that of saccharine which is 300 times that of cane sugar. Valzine has only 200 times the power of cane sugar, but without any of the inconveniences that impair the success of saccharine. The origin and exact chemical composition of valzine are yet secret.—*Journal de Medécine de Paris* June 18, 1893.

## MISCELLANY.

Change of Address.—Medical Director A. L. Gihon, U. S. N., to Naval Hospital, Washington, D. C.; Surgeon Chas. S. D. Fessenden, M. H. S., to Marine Hospital, Mobile Ala.

The Castor Bean in India.—(*Reports from the consuls of the United States.*) There are two chief types of the *ricinus communis*, but of each there are numerous modifications depending on the color, shape of leaves and presence or absence of spinous appendages on the fruit.

The one form is a tall bush almost a tree, a perennial, grown as a hedge or to afford shade around fields in which more delicate crops are being cultivated; it yields a large seed and an abundance of an inferior oil. The second is an annual plant, sometimes grown as a pure crop: it produces a small seed from which is extracted a superior quality of oil of commerce and pharmacy. The oil obtained from the former variety is largely used in India for illuminating purposes and is called "lamp oil."

The yield per acre of seed varies greatly in different sections. The estimated average is 500 to 700 pounds.

In Madras where the plant is extensively cultivated, sowing takes place in July or August, from 12 to 24 pounds of seeds being required for an acre. The seeds germinate in about a week, in the fourth or fifth month flowering occurs and in the sixth capsules are formed.

The following is the Calcutta process for the extraction of oil for medical purposes: The seeds are first cleaned and then placed on a smooth board and each broken in two or three pieces by a flat, wooden mallet, to render separation of husks easy. A basket winnower is then used to remove the husk from the kernel. The latter are dried in the sun and afterwards broken by a crushing machine. They are next put in small canvas or gunny bags and pressed in the hand machine, the oil falling into a pan placed beneath.

The oil is collected in large galvanized iron vats and bleached by exposure to the sun which also causes the sediment to precipitate. It is next boiled; vegetable charcoal added and finally the oil is filtered through flannel or blotting paper.

The oil is manufactured for other purposes than for medicine and illumination. In Assam it is largely cultivated to feed the silk worm. An excellent paper pulp is made with the bark from the stems. It is used by Indian dyers for dressing tanned hides and skins; for lubricating all sorts of machinery, and perfumers make use of it in the manufacture of certain articles. It enters extensively into the making of varnish.

As a method of illumination it is highly valued for the excellent white light, the slowness with which it burns and its freedom from danger. The railways in India burn it and the soot it gives out is almost imperceptible.

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BANEFUL BRANDY.—Walter T. Griffin (Reports from the Consuls of the United States) has given an account of the investigation instituted by Parliament, into the nature of the alcohols used in the manufacturing of beverages in France, and recommends, in the light of the astonishing revelations, the careful consideration of the analyses by American consumers. It seems that a much larger quantity of spirits has been used recently, especially by the poorer classes, on account of the shortage of the wine crops and consequent dearer prices of pure grape juices, and there has been likewise a great increase in the amount of drunkenness and insanity. Thus it was that the matter was called to the attention of Parliament by the Academy of Medicine and a committee of investigators appointed.

A large number of samples were procured from establishments of all classes of retailers, and after analysis every one had to be declared "dangerous and bad." Experiments made by Dr. Herst showed that of five samples of cognac taken from fine boulevard restaurants, where they were sold at a franc a glass, each one was injurious to health and all had been colored with caramel. Samples of brandy taken from less pretentious saloons, were in all cases found to contain common wood alcohol diluted with river water, colored with caramel and flavored with ether and vegetable substances. The examination showed that the alcoholic beverages sold to workingmen, like much too that is sent to the United States, contained impure wood alcohol, amylic acid, formic ethers, etc; the samples were sharp, caustic, burning and colored with caramel, vegetable matter and methylene.

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PAN-AMERICAN MEDICAL CONGRESS—SECTION ON GYNECOLOGY AND ABDOMINAL SURGERY.—All members of the medical profession are cordially invited to attend the meetings of this Section to be held in Washington, September 5, 6, 7 and 8.

The sessions promise to be exceptionally interesting, many valuable papers having been contributed. Those who may wish to read papers before this Section and who have not yet sent in their titles and skeleton abstracts are requested to do so at once.

Papers have already been contributed by the following distinguished gentlemen from the United States and Canada: Drs. T. Johnson Alloway, Montreal, Can.; A. W. Abbott, Minneapolis, Minn.; J. M. Baldy, Philadelphia, Pa.; H. J. Boldt, New York city; Augustus P. Clarke, Cambridge, Mass.; Ernest W. Cushing, Boston, Mass.; Andrew F. Currier, New York city; L. H. Dunning, Indianapolis, Ind.; Geo. R. Deane, Spartansburg, S. C.; W. E. B. Davis, Birmingham, Ala.; Joseph Eastman, Indianapolis, Ind.; Geo. M. Edebohls, New York city; De Saussure Ford, Augusta, Ga.; William Gardner, Montreal, Can.; T. H. Hawkins, Denver, Col.; John R. Haynes, Los Angeles, Cal.; Edw. W. Jenks, Detroit, Mich.; Jos. Taber Johnson, Washington, D. C.; Howard A. Kelly, Baltimore, Md.; Florian Krug, New York city; G. Betton Massey, Philadelphia, Pa.; Lewis S. McMurtry, Louisville, Ky.; R. B. Maury, Memphis, Tenn.; Wm. F. Myers, Ft. Wayne, Ind.; E. E. Montgomery, Philadelphia, Pa.; Robert T. Morris, New York city; Chas. P. Noble, Philadelphia, Pa.; Jos. Price, Philadelphia, Pa.; Geo. H. Rohé, Baltimore, Md.; Jas. F. W. Ross, Toronto, Can.; Chas. A. L. Reed, Cincinnati, O.; I. S. Stone, Washington, D. C.; R. Stansbury Sutton, Pittsburg, Pa.; T. Algeron Temple, Toronto, Can.; A. Vander Veer, Albany, N. Y.; W. B. Ward, Topeka, Kan.

BROOKS H. WELLS,
71 West 45th St., New York city,
*English-speaking Secretary.*

W. W. POTTER,
*Executive President.*

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THE PAN AMERICAN MEDICAL CONGRESS EXCURSION TO ROME.—It has been definitely determined that the Pan American Medical Congress excursion to the Eleventh International Medical Congress will sail on the steamship "Werra" from New York, September 9, the day following the adjournment of the Congress at Washington, and will arrive at Genoa, September 20, four days before the opening of the Rome meeting.

Round trip steamer tickets may be procured for $142.50 for inside rooms, and $150 and upwards for outside rooms. Tickets are good for members of the Congress and their families, and may be used at option of holder to return on any steamer of the line from Genoa, or on Saturday steamers from Bremen, or Sunday steamers from Southampton, during the months of October, November and December. Physicians desiring to avail themselves of this exceptionally low rate should at once become members of the Pan American Medical Congress by sending the registration fee ($10) to the Treasurer, Dr. A. M. Owen, Evansville, Ind., and informing the Secretary General, Dr. Chas. A. L. Reed, Cincinnati, of their intention to join the excursion. Passage should be secured without delay, as the trip, involving as it will, a stop at the Azores and Gibraltar, and a sixty hours' sail along the picturesque coasts of Spain, France and Italy, promises to be very popular. Many prominent European guests of the Pan American Congress will return on this occasion. The time allowed will afford American physicians an opportunity to not only attend the International Congress and visit Rome, but to extend their journey to the famous sanatoria of South France and the Riviera.

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OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers serving in the Medical Department, U. S. Army, from June 24, 1893, to June 30, 1893.

Capt. Marcus E. Taylor, Asst. Surgeon, will report in person to the president of the Army Retiring Board at Ft. Logan, Col., when required by the board, for examination by it. By direction of the President.

First Lieut. Frank T. Meriwether, Asst. Surgeon U. S. A., is relieved from duty at Madison Bks., N. Y., and ordered to Ft. Logan, Col., for duty.

Capt. Louis A. La Garde, Asst. Surgeon, will in addition to his present duties in connection with the World's Columbian Exposition, furnish the necessary medical attendance for the officers and enlisted men of the army on duty at the Exposition grounds.

Capt. William C. Shannon, Asst. Surgeon, in addition to his duties in the office of the Surgeon General, is assigned to duty as assistant to the attending surgeon in this city.

Major Washington Matthews, Surgeon U. S. A., leave of absence granted is extended one month.

Capt. Freeman V. Walker, Asst. Surgeon, now on leave of absence at the Army and Navy Hospital, Hot Springs, Ark., will proceed at once to Ft. Trumbull, Conn., and report in person to the commanding officer of that post for temporary duty, relieving Major Henry M. Cronkhite, Surgeon. Major Cronkhite, upon being relieved by Capt. Walker, will proceed to Ft. Clark, Tex., and report in person to the commanding officer for duty at that post.

First Lieut. Alexander N. Stark, Asst. Surgeon, is relieved from duty at Ft. Monroe, Va., and ordered to Ft. Clark, Tex., for duty, relieving Capt. Edgar A. Mearns, Asst. Surgeon. Capt. Mearns, upon being thus relieved, will proceed to Nogales, Ariz., and report to the senior member of the commission appointed for the locating and marking of the boundary between Mexico and the United States, for duty with the commission.

Major John O. Skinner, Surgeon, having been found by an Army Retiring Board incapacitated for active service, the extension of leave of absence on surgeon's certificate of disability is further extended until further orders.

First Lieut. Benjamin Brooke, Asst. Surgeon U. S. A., is granted leave of absence for two months, to take effect on or about July 15, 1893.

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## ORIGINAL ARTICLES.

### THE MEDICAL ASPECTS OF EMPYEMA.

Read before the Section on Practice of Medicine at the Annual Meeting of the American Medical Association.

BY ROBERT H. BABCOCK, A.M., M.D.
OF CHICAGO.
Professor of Clinical Medicine and Diseases of the Chest, College of
Physicians anc 'essor of Clinical Medi-
cine and graduate Medical
School sician to Cook

It has been the writer's fortune within the past three years to encounter, both in hospital service and consultation, a number of cases of purulent pleurisy following or complicating croupous pneumonia. In most instances the onset was so insidious or the symptoms so obscure and misleading that the recognition of the empyema was a surprise. Moreover, the symptomatology did not answer to the text book description. Generally the case was considered one of pneumonia with delayed or incomplete resolution. In all instances there were certain characters, both of the effusion and also of the symptoms, which impressed themselves strongly on the writer's mind, and he was led to believe purulent pleuritis is more frequently overlooked than need be. It seemed to him also, that this want of recognition was due to incorrect notions as to the etiology, symptomatology, diagnosis and prognosis of the disease, rather than to treatment, or in other words, the medical rather than the surgical aspects of the malady. At all events, it is only since the writer learned to appreciate the important truth that clinical distinctions rest upon bacteriological differences in the effusion, that his conception of empyema has lost much of the haziness still enveloping the subject in the literature and minds of the profession.

It is needless to go with special detail into the history and bibliography of suppurative pleurisy prior to the last ten years, since the real literature of this subject is contained in the medical journals that have appeared since 1885.

To illustrate the rather vague and general manner in which most text books deal with the disease, permit a few quotations from the four following, all of them leading and recent works:

In the eighth and last edition of Loomis' Practice, careful search failed to discover in his article on pleurisy either serous or purulent, any explicit statements regarding the dominant role played by microörganisms in the production and subsequent character of empyema. The date of his work is 1889, and hence its appearance antedated the most recent and instructive investigations of continental observers. In Frank Donaldson's article on this form of pleurisy, in Pepper's System of Medicine, third vol., 1885, there is the following reference to bacteria, in discussing the occurrence of empyema as a sequence of thoracentesis: "If the atmosphere admitted is contaminated by germs, we must acknowledge that such a result is possible." Furthermore, as to the association of empyema with the eruptive fevers he says, "It is doubtful whether their germs pass through the circulation or through the lymph canals, and produce local inflammation of the same nature as their own, or whether they render the pleura more sensitive to shocks of various kinds." Aside from these two sentences, his consideration of the etiology is limited, like that of Loomis, to a discussion of the disease as "primary and secondary," and its occurrence as a complication of infectious and septic diseases, such as scarlatina, typhoid fever, pyaemia, puerperal, septicæmia, etc. Strumpell also fails to speak in more than a general way of the influence of microörganisms in producing purulent inflammations in the course of septic and infectious constitutional affections, employing the vague term, "specific infection." In Wilson Fox's great and really valuable "Treatise on Diseases of the Lungs and Pleura," 1892, the author makes absolutely no allusion to bacteria in relation to the pleuritic exudation to the symptoms. The editor, however, Sydney Coupland, in a note on page 271, in speaking of Friedlander's pneumonia coccus mentions incidentally, "The subject has been still further extended by the detection of the Frænkel-Weichselbaum diplococcus in the inflammatory product of pleurisy . . . . when these diseases occurred as complications of, or sequellæ to, acute pneumonia and also independently of that affection." Osler emphasizes the etiological connection between empyema and certain infectious diseases, notably scarlatina. He comments moreover upon the "special attention" which of late years had been paid to the connection of pneumonia with empyema, and states that the bacteria are most frequently pneumococci or streptococci.

In describing the symptomatology of empyema most authorities fail wholly to distinguish clinical differences in accordance with differences in the character of the pus as determined by the microörganisms therein. Some deal with the subject in so general a way as to be quite unsatisfactory. Thus, Donaldson says, "In chronic purulent pleurisy the symptoms are somewhat different. It commences in a similar manner to that of acute pleurisy, with fever, but in a few days the fever disappears. In the evenings there may be some febrile reaction with slight chills. It is remarkable that frequently vast collections of purulent fluid do not give rise to chills." Loomis says the symptoms vary according to the character of the empyema, whether acute or chronic. "If the inflammatory products become gangrenous, the prostration is extreme, and the patient presents the appearance of one suffering from *peritonitis*; typhoid symptoms manifest themselves very early; and these cases usually terminate fatally within two or three weeks." . . . . "The symptoms of chronic empyema are often very obscure; the presence of pus in the pleural cavity in these cases can not be determined either by the rational symptoms or by physical signs." . . . "There is a gradual loss of flesh and strength; . . . . . and there is an irregular diurnal chill followed by profuse sweats. If empyema occurs as a complication of septicæmia or pyæmia, its commencement is also, at times, very insidious." . . . . "not infrequently pyæmic patients make no complaints which would direct attention to the pleura, and the pleural cavity may be found two-thirds full of pus, without having given a single symptom of its presence." His only allusion to empyema in connection with lobar pneumonia apparently occurs in describing the morbid anatomy, as follows: "The cells in the pleuritic exudation are mainly pus." Strümpell says, "The fever is higher than in the other forms of pleurisy, but it is irregularly intermittent, and is often associated with chills. There are severe general symptoms besides the fever, such as great dullness, headache, and a dry tongue." Respecting the character of the fever in empyema Wilson Fox says, "In purulent effusions on the other hand, the fever may be low from the beginning, or if high at first may diminish in intensity and gradually cease, or a purulent effusion may be apyrexial during a long period of its course, and even the change of an effusion to a purulent character is not necessarily followed by a rise in temperature. Long continued fever of two or three months' duration, with occasional marked exacerbations is, however, in very many cases a symptom of purulent effusion, though not a positive indication of it." Osler states, "in very many cases" empyema "comes on insidiously" in the course of the primary affection or during convalescence. He dismisses the subject of the symptomatology with a few brief sentences, contenting himself with but a few words concerning the fever, as follows: "Symptoms of septic infection are rarely wanting. If in a child, there is a gradually developing pallor and weakness; sweats occur, and there is irregular fever."

These few quotations, although by no means exhausting the works on general medicine and diseases of the respiratory organs that might be cited, probably represent the views expressed in our most pretentious treatises, and with the exception of Coupland and Osler, the authors wrote before bacteriological and clinical observations throughout Europe had become fully proved and accepted.

Under the increased impetus imparted to bacterioscopic research by Koch's discovery of the tubercle bacillus in 1882, able and painstaking investigators began to delve in all directions. And it is interesting and instructive to see how their attention became year by year more and more directed to the study of exudations from the serous membranes, together with suppurative processes wherever encountered. Accordingly, studies into the character of empyema grew in frequency, as did also reports on the various and most approved methods of treatment. Indeed, the medical and surgical phases of the subject became so intimately mingled as to render difficult the separating one from the other, as is designed in this paper.

In 1886 Weichselbaum reported the discovery of streptococcus pyogenes in two cases of sero-fibrinous pleuritis, while in another of sero-purulent effusion this organism was found together with staphylococcus pyogenes. The next year appeared a report by Ehrlich of his bacteriological investigations in forty-five cases of pleuritic effusion, with special reference to the existence therein of bacillus tuberculosis. Of these, nine were empyemata, and in two of these he discovered the bacilli. His paper evoked extensive discussion by Frænkel, Israel, Gerhardt and others, inquiry being chiefly directed as to the conditions that favor the existence of bacilli in purulent, rather than serous pleuritic effusions. In 1888 Weichselbaum again made a report on his study of sero-fibrinous effusion following lobar pneumonia, and in this instance announced the discovery of the diplococcus pneumoniæ. In this same year Banti announced, in two cases of pericarditis with pleuritis following pneumonia, the discovery of the diplococcus in one, and in the other of this together with staphylococcus aureus and albus. Christmas-Dirckink-Holmfeld in investigating the bacteriology of abscesses found streptococcus pyogenes in three empyemas and Rosenbach's micrococcus pyogenes tenuis, in two empyemata associated with mastitis. Kracht also announced pus microbes in ten cases of empyema, as follows; In two, staphylococcus albus only; in two, only staphylococcus aureus; in one, streptococcus pyogenes; and in four staphylococcus albus and aureus together; in one, albus, aureus and citreus; and of these ten cases two would seem to have followed pneumonia. He furthermore carried out experiments on rabbits to determine the conditions governing the development of purulent exudations. From these he seems to have demonstrated that pus or other cocci are absolutely essential to the development of a purulent pleuritic effusion, and that there must be either previous injury of the membrane or the presence of a fluid capable of affording a suitable soil for their growth. Furthermore, supported by *post-mortem* examination of 151 cases he declared his conviction that catching cold exercised no influence whatever in the causation of an empyema.

But the most important contribution of that year to the medical aspects of empyema was made by Fraenkel. In his twelve cases which he divided into four groups, he identified bacteria as follows: first, three cases streptococcus pyogenes, it being uncertain whether or not a pneumonia had preceded; second, three cases that followed pneumonia—Fraenkel's diplococcus pneumonia; third, four cases in tuberculous subjects, in one bacilli in limited numbers, in one other streptococci. He concluded, therefore, with Rosenbach, Garre, Ouston, and others that, as in cold abscesses, tubercle bacilli are rare in this form of empyema, and that it is the spores which are present. In the two cases of the fourth group the empyema was due to the propagation of streptococci by the lymph channels from centers of infection situated at a distance. Certain of his conclusions are important to us, as follows:

1. The discovery of strepto- and staphylococci does not enable us to determine whether an empyema is primary or secondary, since it may be secondary to genuine croupous pneumonia, tuberculosis and centers of infection outside of the pleura.

2. Contrary wise, the existence of pneumococci exclusively indicates the previous existence of lobar pneumonia.

3. It would seem that those cases of spontaneous recovery by perforation into the bronchi, described by Traube were exclusively or at least for the most part, of the kind due to pneumococci.

In the succeeding two years, 1889 and 1890 additional reports along the same line of investigation were made by a still larger number of observers, chief of whom were Thue of Christiania, Marfan, Netter, Dreyfus-Brisac, Troisier, Woillez, Jaccoud, Türk, Renvers, Leyden, Liebermeister, Kelsch, Bewley, Immermann, Schede and Mosler. To all but a few of these numerous and often valuable contributions in the line of original work, space forbids more than the merest reference. Thue not only made successful cultures of pneumococci from the pus taken from the pleural cavity, but by the microscope detected these organisms in great numbers blocking the lymphatics leading to the pleural cavity. Netter's paper based on forty-five cases of "metapneumonic" empyema, as Gerhardt had christened it, went into the subject with great detail. According to him, this form may be either primary or secondary and may appear prior to the crisis. At times there is a mild intermittent temperature and occasionally there is no fever; the prognosis is favorable. Cure may take place by resolution. The primary form may be observed, he states, in children. Marfan endeavored to differentiate by their clinical picture the pyæmic, pneumonic and tuberculous forms of empyema. These characteristics will be stated in another part of this paper.

In 1891 this subject still continued not only to awaken interest, but to stimulate to additional inquiry, particularly as to the clinical appearances in the light of earlier and well settled bacterioscopic data. Bassi described a case of double sided rapidly fatal pleuritic effusion which contained Frænkel's diplococcus with staphylococcus p. aureus, and which *intra vitam* closely simulated a double sided pneumonia.

Von Ziemssen discussed twenty-five cases of purulent and two of sero-fibrinous pleurisy in children, and emphasized the benign character of that due to pneumococci as against that of streptococcus empyema. Vignalou confined his paper to a consideration of the characteristics of streptococcus empyemata. Wolbrecht, in reporting eighty-one cases of perityphlitis in Gerhardt's service at the Berlin Charité, dwelt particularly upon the not infrequent occurrence (38 per cent.) of right-sided pleuritis as a complication some of them being purulent. Hanot described a case of fatal streptococcus empyema arising in the course of scarlatina. One of the most exhaustive contributions, however, of that year, was a thesis at Paris by Courtois-Suffit, to whose conclusions particular reference will be made again repeatedly.

In the literature of 1892, it would seem that the contributors have concerned themselves mainly with the surgical treatment. Thus on the continent, the history of empyema for the past decade may be summarized as follows: as might be expected, bacterioscopic investigations prevailed for the first three or four years; these led gradually and imperceptibly to the study of the clinical phenomena, based on a clearer comprehension of the etiology and pathology. Until now, enlightened on points previously obscure to them, surgeons are proving the best methods of operative interference.

Meantime, what was being done and what reported in England and the United States? Alas! but little except plodding along in the old beaten paths. The influenza epidemics afforded abundant material for observation and treatment; and hence English and American periodicals teem with reports of cases. In some, lamentable ignorance is displayed of recently established truths; while in others, reporters allude incidentally to facts of etiology and pathology in a manner that evidences their familiarity with the subject. There are some notable exceptions, however.

Drummond in 1891 considered in clinical remarks on empyema the relation existing between it and pneumonia, its bacterial nature and its great frequency. He expressed the opinion moreover, that serous exudation within the pleural cavity is almost never transformed into pus, but the purulent effusion is such *ab initio*. In November, 1890, Bewley of Dublin, had contributed an elaborate paper on the subject, and although his investigations like those of many others, added nothing new, they are memorable as having been among the earliest undertaken by English speaking investigators. In this country in that same year appeared a paper by Mary Putnam Jacobi, wherein she considered chiefly points in diagnosis and the effects of pressure on the heart. Bayard Holmes of Chicago, contributed an able presentation of the subject to the Cook County Hospital Reports for 1891, in which he not only set forth correct principles of its surgical treatment, but displayed intimate acquaintance with the bacteriology and pathology of the disease. A paper by Koplik in 1892 dealt with empyema as it occurs in childhood and discussed its relations to pneumonia, etc. Other contributions, notably one by Osler and another by Light are concerned with pulsating empyema and the conditions of its production.

Although not intended to be an exhaustive enumeration of the literature of this subject, and having to do with only the medical phase, these remarks it is hoped, will present at least a correct résumé of what has been done in this field of medicine in the past ten eventful years.

### ETIOLOGY.

From such reports as the foregoing it is safe to assert that the determining factors in suppurative pleuritis may be positively stated. The exciting or immediate cause of an empyema is the presence of microörganisms in the pleural cavity. There may be several kinds, either such as are pathogenic of some attendant affection, as the diplococcus of Fraenkel or Freiländer's pneumococcus, or the bacillus tuberculosis; at other times the germs are pyogenic, either streptococci or staphylococci, or a mixture of these, or of one of these with pneumococci or tubercle bacilli. In the case of gangrenous empyema the microörganisms are saprogenic.

Furthermore, according to Netter and Courtois-Suffit at least, purulent pleurisy due to the pneumococcus may be primary, particularly in children. Tubercle bacilli may also occasion a primary effusion, which, according to Marfan, is serous if the bacilli are encapsuled, but purulent when they gain access to the pleural cavity.

In most cases, however, whether the empyema is metapneumonic or pyæmic, it is secondary. In the case of pneumococcus purulent pleuritis the observations of Thue indicate that the access to the cavity is by way of the lymphatics. In the form due t pyogenic bactéria, on the contrary, Marfan considers the exact mode of their propagation not definitely ascertained. They may be carried by the lymphatic circulation into the pleural cavity. But it is also conceivable that they may gain access through the blood, in way of secondary infection. For instance, in scarlet fever or some other disease occasioned by a pathogenic organism, the germicidal action of the blood becomes weakened or destroyed, and all barrier is removed to the ingress of other germs, and of course, pyogenic. In the case of a pyæmic empyema Rosenbach has shown that the *atrium* of infection may be a furuncle or some bone disease; according to Fraenkel, a tonsilitis or pharyngitis; and in such, as in a septic pneumonia, the channel of infection of the pleura is probably lymphatic.

Kracht's experiments seem to show that the healthy pleura can successfully resist the action even of these formidable invaders and that suitable conditions for their development must be afforded either by mechanical or chemical injury, or a fluid affording proper soil for their growth must be present. In septicæmic conditions, therefore, an alteration in the normal properties of the cell doubtless takes place that serves like a chemical injury to favor the development of the microörganisms on the membrane capable in health of successful resistance.

In accordance with these facts we have the following well known list of local and general conditions to which empyema has been recorded as secondary: Infectious and eruptive disease, influenza, erysipelas, pyæmia, puerperal septicæmia, croupous pneumonia, septic broncho-pneumonia, pulmonary tuberculosis, phlegmons as furuncles, suppurative disease of bones, tonsilitis, pharyngitis, perityphlitis, purulent otitis, etc. Of these, croupous pneumonia and influenza are the most frequent predisposing causes.

## MORBID ANATOMY.

Under this head are considered only the character of the exudation and the changes in the pleuræ. In the metapneumonic form Marfan, Courtois-Suffit and others describe the pus as thick, creamy, odorless and of a greenish or greenish yellow color. It is remarkably rich in fibrine that may float about as large *flocculi* and often block the aspirating needle. The pleuræ are thickened by firm layers of false membrane which by adhesion encapsulate the pus. Indeed, the tendency of this variety of empyema to become encysted is emphasized by all observers. Not infrequently the pus is very circumscribed, being limited to a single lobe or even to but a small part of a lobe. Potain has designed such as "interlobaire." In some cases more than one pus pocket is formed. The amount of exudation is said to be greater in the acute and primary than in the latent or insidious form. All observers comment, also, on the great liability of pneumococcus empyema to spontaneous evacuation through the bronchi. Moreover, Türk has shown that this occurrence is not attended by the formation of pneumothorax, since the pressure under which pus is forced by the act of coughing into the bronchi is greater than that of the inspired air.

In the empyema of streptococci the pus is thin, yellowish, without odor, flocculent and displays no tendency to become encysted. The development of the pleurisy is slower than that of empyema due to pneumococci, and the amount of effusion is usually moderate.

The empyema due to bacillus tuberculosis may be likened to a cold abscess; the pus is thin, yellowish, opaque, odorless and contains no flakes of fibrine; but the pleura is thickened by layers of plastic exudate, containing tubercular nodules. In this form we frequently find permanent fistulous openings in the parietes through which pus is chronically discharged.

In purulent pleurisy, caused by mixed infection, the character of the pus is determined by the microörganisms which are the most virulent or possibly most numerous.

Pleurisy occasioned by pyogenic organisms may occasionally complicate pulmonary tuberculosis. Pyæmic empyema displays no tendency to rupture spontaneously into the bronchi. Jaccoud has described a case of empyema (variety not stated) in which the pus burrowed its way into the perineum and scrotum and finally burst into the bladder.

Völker tells of a boy six years old, in whom ingested liquids were discharged through the opening in the chest wall. Autopsy revealed necrosis of the heads of the fifth and sixth ribs, and the vertebrael and small perforations of the œsophagus communicating with the empyema cavity.

## SYMPTOMATOLOGY.

Since the characters of the pus vary in accordance with the nature of the microbe, particularly whether pathogenic or pyogenic, it would follow that the symptomatology must differ and be determined in its chief features at least, by the nature of the effusion. This is true, no doubt; but as yet clinical observation has not kept pace with bacteriological investigation. Moreover, this part of the subject has its difficulty enhanced by the fact that in most purulent pleuritic effusions more than a single kind of microörganism is present. Nevertheless, we are able to distinguish pretty clearly, in our present state of knowledge, three, yes! four chief types, if we include the gangrenous form of empyema.

Here again the writer will avail himself of the statements of Courtois-Suffit and others, since the cases given later on, like most others observed by him belong to but one category:

1. A metapneumonic empyema may arise suddenly, either independently of croupous pneumonia, or according to Jaccoud, in association with the pulmonary affection, being detected usually about a week after the onset of that disease. At other times the empyema develops insidiously during the course of the pneumonia and is then recognized after the primary disease has resolved, or it arises abruptly and acutely during convalescence from the pneumonia. The temperature is that of a continued fever without distinct and striking irregularities. The pleurisy may terminate by absorption or spontaneous evacuation, as previously stated. In this latter event gradual obliteration may take place by cicatrization of the fistulous tract—or, according to Courtois-Suffit, an encysted cavity may be left behind.

Netter agrees with Jaccoud that the empyema sometimes appears before the crisis of the pneumonia, but states furthermore that the fever occasionally assumes the character of a mild intermittent and is in other cases entirely absent. Chills and sweatings are not severe.

2. Marfan distinguishes all empyemata due to

pyogenic organisms as pyæmic, whereas, Courtois-Suffit endeavors to differentiate between that of streptococci and staphylococci, and that in which the former alone act as the morbific agent, by the still greater gravity of the infection. The difference seems to be one of degree, not of kind. Indeed this may be said of all varieties of purulent pleuritis. Since the distinction between empyema due to streptococci and that from mixed infection, as Courtois-Suffit terms, it is subtle, it is practicable to group them together.

This pyæmic form is secondary to some local suppuration or constitutional infection, as puerperal septicæmia, and may be insidious and latent. Should it follow the primary affection, its onset may be acute, frank and painful. Its evolution is slower than in the case of metapneumonic empyema. The temperature is that of streptococcus infection, with marked remissions and exacerbations. Chills and sweating are pronounced, prostration and emaciation progress steadily, and the clinical picture is more or less distinctively that of sepsis, as described in most text books. The duration may be long and death is generally from exhaustion. Rupture into the bronchi forms a rare termination.

3. Tuberculous empyema may also set in acutely and distinctly, or its development may be so insidious and its symptoms so latent that the patient is unconscious of its presence, although the effusion is copious. The fluid accumulates slowly but persistently, the general health not being much affected and fever being absent. Those cases described by authors as chronic and without evidence of fever or other grave constitutional disturbance probably belong either to this or the metapneumonic type.

4. Gangrenous pleurisy rapidly occasions most profound and dangerous symptoms of sapræmia, the characters of which are too well known to need repetition here.

The symptomatology displays nothing characteristic as regards respirations and pulse. The former may appear natural, while the pulse corresponds in strength and rate to the degree of prostration and sepsis. Cough, except there be phthisis, pneumonia or some other affection of the lungs, appears to depend on the degree of accompanying bronchitis. Pleuritic pain, if present in the beginning, disappears as the exudation occurs. Œdema of the affected half of the chest is not frequent, but according to Vignalou may be observed in streptococcus empyema. Dryness of the tongue is determined by the degree of the septicæmia and may not exist in mild cases of pneumococcus pleurisy. Disturbance of the sensorium also depends on the character of the effusion and the resulting degree and duration of systemic infection. In short, the clinical picture displays a wide variety of shade and coloring determinable by the bacteriological factors.

## DIAGNOSIS.

It goes without saying that physical signs by which a simple pleuritic effusion is detected are serviceable in the determination of an empyema. There is one exception, however, that must be borne in mind. Owing to the fact that pneumococcus pleurisy is generally encysted and that this is by far the most common form of empyema excepting perhaps the tuberculous, the upper line of dullness does not shift with change in the patient's position. Moreover, the sacculation of the pus prevents the upper line of dullness from assuming the curved or "S line of Ellis," so characteristic of sero-fibrinous effusions. In other varieties of empyema in which adhesions are not so apt to take place, there may be no deviation from the usual laws governing dullness on percussion. But in empyema associated with or following pneumonia the exudation is very likely to be circumscribed to the limits of the affected lobe throughout—or to occupy the greater portion of it, thereby leading to diagnostic errors. If the empyema has developed during the course of a croupous pneumonia the persistence of dullness over the lobe together with the constitutional disturbance leads the practitioner very naturally to conclude resolution is delayed. Or, if the pus be circumscribed to an area below the angle of the scapula, and dullness remain over this area, after resonance has returned round about, the conclusion is natural that resolution is incomplete, or, perchance that a pulmonary abscess has supervened. In several instances of this kind observed by the writer, indispensable and oftentimes decisive information was derived from evidences of pressure on the heart. True! cases exist in which the encysted pus is of so small amount as to occasion almost inappreciable displacement of the apex beat of the heart. In such instances, as well as in those with displacement of the apex to the left from enlargement of the left ventricle, etc., positive diagnosis may not be possible without the aid of the aspirating needle. Changes in the heart's position are more difficult also of determination when a small empyema is left sided. It is this sort of circumscribed empyema which Potain has described and because it is confined within the limits of a lobe has designated *la pleurésie interlobaire.*" On account of the liability of its being mistaken for a pneumonia, if reliance is placed on the results of percussion, he advises careful study of the breath sounds and of pectoriloquy, to which may be added signs of pressure on adjacent viscera.

Aside from physical signs, valuable aid in determining the nature of a pleuritic effusion may be derived from careful study of the temperature taken at frequent and regular intervals. In this way the writer believes irregularities will always be detected which, although slight, perhaps of only one- or two-fifths of a degree, are yet too frequent and unmethodical to be mistaken for those of the diurnal, physiological variations. Although Courtois-Suffit states the pyrexia of pneumococcus empyema to be that of a continued fever without irregularities, the admixture of pus microbes with those of pneumonia is so frequent in these cases that slight, yet significant variations in the temperature are generally observable.

Finally, should all means of making a differential diagnosis fail us, we may yet fall back as a last resort on exploratory puncture. Nevertheless, this is not infallible, as will be seen in one of the following cases, for the pus being often circumscribed, the needle may be passed in a little at one side—or it may enter an adhesion and therefore draw no pus.

It is evident, therefore, that the diagnosis of that very form of empyema which is one of the most common, is not always easy.

## PROGNOSIS.

In empyema due to pneumococcus the prognosis may be considered favorable. The mortality, according to Courtois-Suffit does not exceed 5 or 10 per cent., according to Netter 2 or 3 per cent. and it yields to simple puncture and drainage. Absorption of the pus is possible or it may in rare cases become chronic, but if not operated on is very likely to break through into a bronchus. According to Jaccoud this spontaneous evacuation takes place in 25 per cent. of the cases. In this event of course there is a new element of danger, from the entrance of pyogenic organisms.

In empyema due to streptococci or staphylococci or both, danger to life is far greater depending on the degree of septicæmia. Spontaneous cure by absorption or evacuation through the bronchi is most unlikely, and if an operation be not performed death is probable from septicæmia. The duration of the disease may be long, provided constitutional infection is slight. Simple puncture and drainage are not sufficient.

In the variety known as tuberculous the duration may be also long, but the effect on the general health or on the pulmonary affection may be apparently slight. Death generally results from the tubercular disease of the lungs rather than from the empyema as such. Its removal by surgical interference is advisable however.

Gangrenous empyema is extremely grave, but not necessarily fatal, since Hanot has reported a case which recovered under appropriate and radical surgical methods:

*Case 1.*—A. F., female, aged 6 years, seen in consultation about March 1, 1892. History of acute illness a month earlier, thought to be la grippe and characterized by high fever, some stupor and intense pain in the back and posterior portion of the left side; cough present, but not a marked feature. After about a week or ten days symptoms subsided, and child was thought convalescent. Patient then unexpectedly complained one day of chilliness; fever returned, gastric symptoms became urgent, and the case dragged on with daily pyrexia of a distinctly remittent type; emaciation and weakness increased, but the friends and attending physician noticed no sweatings or manifestations of rigors. Cough and dyspnœa were never pronounced symptoms. The child seemed simply wasting away gradually from the daily fever. *Status presens*—Patient in bed, moderately emaciated, nervous, restless, with considerable muscular strength, skin dry and somewhat harsh, temperature about 99 3-5 degrees at 10 o'clock A. M., pulse rapid and weak, tongue not peculiar, no complaint of pain. Physical examination—marked dullness at base of left lung, extending from just below scapular ridge forwards and downwards to a point just a little outside of and below the level of the left nipple and posteriorly down to the inferior limits of the thorax. The area of dullness was confined to and corresponded almost exactly to the boundaries of the left lower lobe. It did not shift its position. Elsewhere the percussion note was resonant. On auscultation the breath sounds over the dull area were bronchial and voice was distinct and of diminished intensity. In the remainder of the left and throughout the opposite lung sounds were normal. Over the central portion of the area of dullness, in which the dullness approached to flatness, pectoral fremitus was abolished. The intercostal spaces seemed to be somewhat more prominent, as was also the rotundity of the affected side. The heart's apex could not be felt distinctly, but seemed to be situated further toward the median line than is normal to a child of that age. The cardiac sounds were free from murmurs. There was no doubt in the writer's mind of the real nature of the difficulty, yet the physical signs were puzzlingly like those of pulmonary consolidation, and therefore he hesitated to advise surgical interference without ocular proof to the parents of the existence of pus, all the more, even, since the suggestion of empyema was incredible to the attending physician. An attempt to insert a needle occasioned such fear and excitement to the child that it had to be abandoned. It was then decided to determine the existence of empyema by the symptoms and temperature. Minute questioning elicited the fact that at times, usually in the forenoon, the child would ask to have the bedclothes tucked about her on account of feeling a little cool. It was learned too that occasionally slight moisture would be observed on the skin. The fever rose each afternoon and reached the neighborhood of 103 degrees. It was decided to wait until Wednesday, P. M., then four days distant, have the temperature taken by the nurse and recorded every four hours, day and night, and then if the temperature chart did not decide the question to resort to aspiration under an anæsthetic and operate immediately, if the result so indicated. It is a matter of sincere regret that the temperature record could not be obtained from the nurse whose address has been lost. But it can be stated very positively that the temperature ran as follows: Between seven and nine A. M., it reached its lowest figure, about one- or two-fifths of a degree F. above 99 degrees and then rose steadily almost without fluctuation to 102 and three or four-fifths degrees at about 5 o'clock P. M.; from this height which was maintained until midnight, the curve would gradually and steadily descend, almost without fluctuation until in the A. M., between six and nine o'clock, it stood midway between 99 and 100 degrees. Upon comparing the records of corresponding hours, however, it was found that they sometimes varied as much as one- or two-fifths of a degree. Suspicions were confirmed Wednesday, and that day an engagement was made with the surgeon, Dr. Bayard Holmes of Chicago, to operate Thursday. Wednesday evening news was brought to the writer of a great and astonishing change in the child's condition. During the afternoon she had begun suddenly to cough and expectorated a small amount of thick yellow sputum mixed with a little frothy mucus, and the fever had not gone much above 101 degrees. It was concluded by the writer at once that the pus had begun to break through into the lung. Whereupon the surgeon was notified and accordingly appeared ready for action early the following morning. The prediction was made that the pus would be thick and creamy and circumscribed.

So soon as the little patient was well anæsthetized a good sized hypodermic needle, previously and carefully asepticized, was introduced and a syringeful of thick, creamy yellowish odorless pus was obtained. A portion of a rib in the middle of the area of dullness was resected, and so soon as the intercostal tissues were opened with a pair of blunt pointed forceps, about a pint of pus simply spurted forth. The pressure was evidently great, as it spurted nearly to the ceiling. Huge fragments of fibrine were extracted, a double drainage tube was inserted, one-half of which was perforated, the wound was properly dressed and the diagnosis had been verified. The child made an uninterrupted recovery. Unfortunately the pus was not examined for microorganisms, owing to failure to secure a sample uncontaminated by exposure to the external atmosphere. However, the history of the case and the character of the pus make it reasonably certain that pneumococci were chiefly concerned in its production.

*Case 2.*—Col. W., war veteran, aged fifty-eight years, became ill Jan. 21, 1892, with lobar pneumonia of right lower lobe, and a couple of weeks later passed into the charge of Dr. C. B. Reed, who found him still very ill and with considerable fever, there having been no permanent subsidence of temperature following a usual crisis. Until the 20th of February the patient's temperature fluctuated in the morning between ninety-eight and three-fifths and 100 degrees, and in the evening between 100 and 101 3-5 degrees. Between Feb. 20 and 28, the A. M. temperature ranged between ninety-eight and three-fifths and 100 degrees. At evening the thermometer registered variable temperatures, from 100 2-5 degrees on the 20th up to 103 2-5 degrees on the 28th. It then subsided and for the month of March remained fairly low as shown by the accompanying chart. His general condition was feeble, however, and he was supported with tonics, as quinine, stimulants and nourishing foods, in the hope that the lung would eventually clear up. March 24, patient coughed up a little pus. April 13, he again expectorated pus, this time about a pint of thick yellow pus. The following day, April 14, the writer was asked to see him in consultation, as it was supposed he had developed a pulmonary abscess. *Status presens*—patient was in bed, feeble, emaciated, skin dry, tongue not specially noteworthy, pulse 108 and weak, appetite poor, bowels rather constipated, intellect clear, but patient very nervous. Questioned as to chills, he admitted slight chilly sensations "down the back." Physical examination—inspiration showed respirations easy and heart's apex situated close to the left nipple in fifth interspace. Palpation—diminished pectoral fremitus over the right infrascapular region, exaggerated in front; percussion—impaired resonance on the right side of the chest anteriorly, dullness limited to the right lower lobe, being specially marked and with distinct sense of resistance below the inferior angle of the scapula; auscultation—exaggerated vesicular respiration anteriorly, faint bronchial respiration in upper part of lower lobe, but suppressed in the infrascapular region, over the area of most pronounced dullness, voice sounds nowhere cavernous, but a small area of pectoriloquy at the level of the fifth rib just outside of the anterior axillary line, no râles and nowhere any indication of a cavity. The left lung was normal thoughout. Accordingly the diagnosis was made of empyema following pneumonia and having begun to break through into the lung; not a pulmonary abscess. An exploratory puncture was advised to settle the question and it was replied that a surgeon, Dr. Weller Van Hook, had already aspirated without obtaining pus. Nevertheless the opinion was maintained that it was empyema, and for some reason, perhaps because of sacculation of the pus, the needle had failed to reach the pus. During the next few days more pus was expectorated, and on the 17th the writer summoned again in consultation to determine whether or not patient could endure an operation. Examination now revealed an area of impaired resonance of tympanic quality where previously dullness and pronounced resistence had existed. The breath sounds too, were blowing imperfectly amphoric. There was no doubt of a cavity, and the writer believed a circumscribed pneumothorax. The operation was advised without delay. Accordingly it was done, and both Dr. Reed and Dr. Van Hook became convinced that the condition was an empyema which had ruptured into the lung. Patient made a slow recovery. Unfortunately no pus suitable for bacteriological investigation could be obtained in this case.

Plate I.

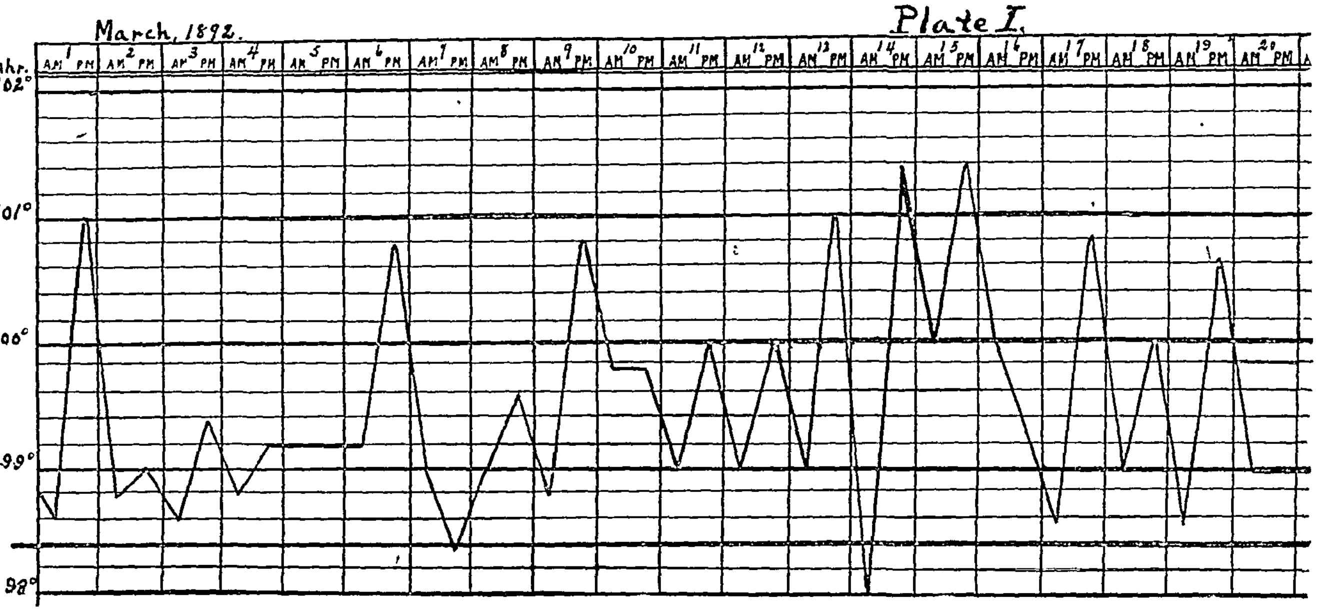
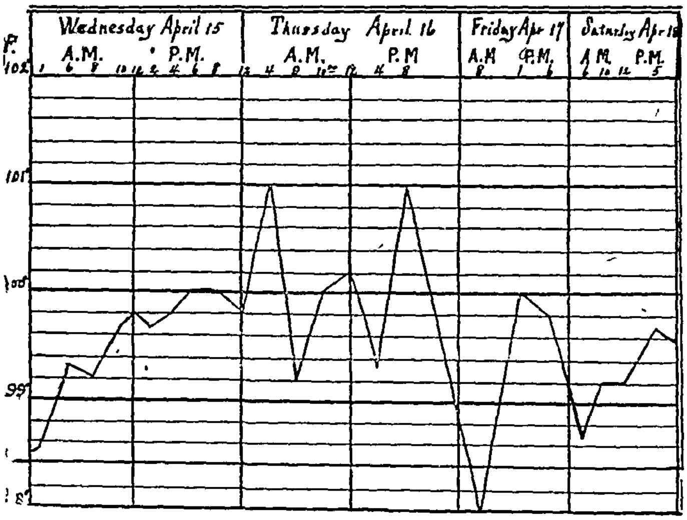


Chart 2 shows the temperature for three days intervening between the first examination by the writer and the final operation.

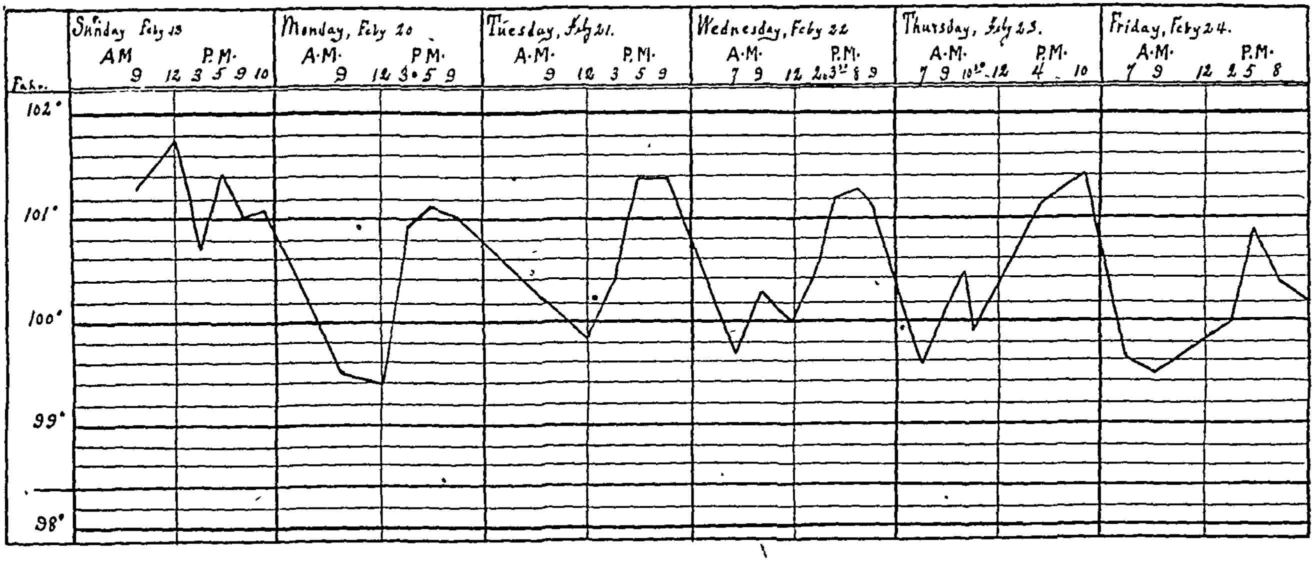
Plate II.



*Case 3.*—Feb. 24, 1893, was called in consultation by Dr. R. N. Hall to see Mr. H., aged 37 years, bookkeeper, who gave the following history: About a month previously patient had been stricken with croupous pneumonia of right lower lobe; disease pursued a typical course until th

seventh day when the usual critical defervescence occurred; instead, however, of temperature remaining normal, pyrexia again appeared and for the ensuing three weeks maintained an irregularly remittent character, falling in the early morning to 99 degrees, or sometimes a little below, and rising the P. M. to 101 2-5 degrees. His strength grew very feeble, heart's action alarmingly weak at times and emaciation progressed, in spite of tonics, and as much concentrated nourishment as he could be made to take. The signs of consolidation of the lobe did not clear up, although cough had greatly diminished and expectoration had become chiefly or mainly catarrhal. *Status presens*—patient in bed, lying partly on the right side, emaciated, feeble, very nervous; pulse rapid and of feeble, irregular force, skin rather dry, tongue coated but moist, appetite moderate, bowels inclined to constipation; temperature 100 degrees, pain in right side of chest when patient assumed left decubitus. Physical examination—apex beat in fifth interspace, just within left mammary line and in force a scarcely perceptible tap; cardiac dullness extended from median line to half an inch outside of left nipple. Over the left lung resonance and respiratory sounds were of normal quality but somewhat exaggerated. In comparison at least the anterior portion of the right half of the thorax was impaired in resonance and the breath sounds were slightly broncho-vesicular; posteriorly and laterly the base of the right lung was slightly yet appreciably larger in diameter than the corresponding part of the opposite side, and the intercostal spaces felt somewhat filled out, particularly just below the angle of the scapula. Percussion revealed dullness extending from just below the suprascapular ridge downwards and forwards to the lower border of the fifth rib a little outside of the anterior axillary line, being from this point backward and in the infrascapular region specially intense; respiratory sounds over this dull area were faint and bronchial, accompanied by a superficial, subcrepitant, evidently pleuritic exudation râles, just below the inferior scapular angle. Hepatic dullness extended an inch below the costal arch, and at this level the tender lower edge of the liver could be palpated. Diagnosis—empyema following or rather associated with lobar pneumonia. It occasioned surprise and incredulity, particularly in the mind of a third physician present, because of the trifling symptoms of sepsis. However, the suggestion to introduce an aspirating needle was endorsed; the center of the dullest area was determined; the previously asepticized needle was introduced and a syringeful of thick, creamy, slightly greenish yellow, odorless pus was withdrawn. The following day was selected for the operation. The annexed chart No. 3 shows the temperature as taken at irregular hours for a week prior to the surgical interference.

Plate III



The writer was not present at the operation but will narrate the details as nearly as he can recall them from the description given by the operator, because interesting and instructive. After patient had been etherized an aspirating needle was passed into the pleural cavity at a point somewhat forward and inferior to the area of most pronounced dullness. No pus was obtained. Nevertheless the intercostal space at the point was dissected down upon and then opened; hemorrhage occurred, necessitating the use for a few moments of iodoform packing. When the flow of blood had ceased sufficiently at least, the finger was introduced and a few indistinct adhesions were thought to be felt, but no pus. Somewhat higher up and backward, however, could be felt a boggy mass that seemed to bulge from the surface of the lung into the pleural cavity and from its feel was supposed to be a pulmonary abscess. The attempt to open into this abscess with the finger nail failed, owing to the toughness of the overlying membrane, and hence seemed to confirm the conclusion that this was a pulmonary abscess and not empyema enclosed by false membranes. Consequently using his finger as a guide the surgeon penetrated the pus sac by means of a pair of Bilroth's forceps; blood and thick, creamy pus escaped, and at the same time it became evident that a communication had been formed between the parenchyma of the lungs and the pleural cavity. Drainage tubes were inserted, the wound suitably dressed and the patient returned to bed. The subsequent history was that of a slow recovery.

The conclusion seemed inevitable that a pulmonary abscess and not an empyema had existed. The writer was not convinced, however, and submitted a sample of the pus first obtained for microscopic examination to Dr. Adolph Gehrmann, a competent microscopist. His report is as follows, and effectually disposes of a pulmonary abscess.

"The specimen of empyema pus given to me showed upon microscopical examination blood and pus cells, numerous chain and grape cocci and a few pneumococci. There were no epithelial cells or elastic fibers.

The cultivation experiments were entirely negative, although I made six plate cultures from the material. Some of the antiseptic solutions used during the operation must have been mixed with it. I have slides for reference."

The following points in the foregoing cases seem worthy of comment. In the examination of the child, bulging or smoothing out of the intercostal spaces over the affected lobe was noticed. This is not in accordance with the statement of Chapin, who attributes the absence of bulging to the great compressibility of the lungs in childhod. And that the pressure was great was evidenced by the distance to which the pus spurted, as soon as the incision was made. The height of the post meridian temperature, as compared with that of the morning, was unusual for a pneumococcus empyema; and yet the pus corresponded in character to that produced by this organism. It may be reasonably assumed, therefore, that this peculiarity was due to the age of the patient.

In both cases, two and three, although for different reasons, the condition was mistaken for a pulmonary abscess finally. Yet in both at first resolution was thought delayed. In both, the course and variations of the fever quite closely bear out statements made as to its mildness and trifling irregularities. Distinct chills and perspirations were wanting in all. In cases one and two, the tendency to spontaneous rupture into the bronchi was displayed. Case one appears from the history to have set in acutely after the crisis of the pneumonia. The other two developed insidiously. All three were encysted. They all belong evidently to one category, and were metapneumonic.

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## DISCUSSION OF PAPERS ON PNEUMONIA.

**Dr. William E. Quine**, *Chicago*.—The various opinions that have been expressed with respect to the treatment of this disease seem to indicate that the subject has been regarded from every rational point of view and from some points of view which, if not irrational, at least are so difficult to understand, that some rational beings find themselves in a very serious dilemma. The whole philosophy of the situation in relation to pneumonia is that we do not treat pneumonia at all, we treat the individual and ignore the name and the morbid anatomy connected with the disease with which the individual is affected. In some cases of pneumonia from beginning to end the line of treatment is vigorously supporting; in other cases the line of treatment in the beginning is actively sedative and toward the end is likely to be supporting. The philosophy of the situation is embodied in the statement that pneumonia is to be systematized, classified; we are to ignore the fact that the patient has a specific disease and we are to obviate the tendency to death. In one case this tendency is from cardiac asthenia, in another case from compression of the nervous centers and in a third case it is from gastric irritability. We can understand in reference to the complications the phenomena which develop in the course of pneumonia, that a place may be found in these cases for the administration of calomel, in other cases for strychnia or carbonate of ammonia or some other medicine. The gentlemen who take a positive stand against a stimulant or a sedative line of treatment it seems to me sometimes find themselves in a dilemma from which it must be very difficult to extricate themselves. My understanding of the signification of the term stimulant is that it is a medicine which increases action and that sedative diminishes action; how alcohol can be a sedative and a stimulant at the same time is a question I should be very glad to have explained. The gentleman who is a firm believer in drugs and who has a somewhat vigorous predilection for the administration of calomel in the treatment of pneumonia, has derived very satisfactory results from the administration of a mixture of nitrate of amyl, nux vomica and digitalis, but if I have not forgotten some of the things I have learned in the study of materia medica, these agents are physiologically opposed. You give a medicine that lessens vascular fullness and one that increase it at the same time. It would seem as advantageous to the patient to give him absolutely nothing, bid him Godspeed and give him a fair show for his life.

Cases of pneumonia as they have come under my observation—I refer to croupous pneumonia—are ordinarily easily divided into two groups, in which the term sthenic and asthenic may be properly employed. In a case of sthenic pneumonia, in a robust vigorous muscular individual whose pulse rate is 120, temperature 105, I am not able to see any impropriety in the administration of veratrum. It slows the pulse it is true, and relaxes the arterioles of the body and thus relieves the heart, that is equally true, and it seems to me that in these sthenic cases of pneumonia veratrum administered in the early stage to the extent of controlling the circulation is a medicine that is capable of doing some good; I am very far from advocating it as a *sine qua non*, as a medicine that must be given, and equally far from referring to strychnia or carbonate of ammonia in this way, but I think that veratrum has a place, as carbonate of ammonia and strychnia, and as I firmly believe, alcohol has a place.

DR. BABCOCK:—I quite agree with the author of the first paper that we cannot rely upon statistics; I do not believe that we know whether we have more deaths from pneumonia now than we did thirty years ago. There are many conditions in pneumonia that require different treatment and there are many locations where it requires different treatment. In the South, where we have malarial poison, we would likely treat a case of pneumonia with quinine; and in different locations the treatment would be different.

The author of the second paper spoke of blood letting reducing the toxines of the blood, but we must remember that at the same time we are reducing the toxines of the blood we are also reducing the oxygen, and in that case I don't believe blood letting would be of any benefit. As to the pneumonia of old age, last winter two cases came under my observation with pneumonia, and it is astonishing the amount of alcoholic stimulant they will bear; the two different cases were between seventy and eighty, and during their sickness must have taken as much as a gallon and a half of whisky, and they bore the whisky well. In regard to alcohol, it not only acts as a stimulant but also as a bacillicide; it has the same effect on the poison of pneumonia as it has on the diphtheria bacilli. We would not think of bleeding in cases where the vitality of the patient is run down, there we would need stimulants and tonics. However, I believe, we are very much at sea in the treatment of pneumonia. In my part of the country the generality of practitioners recommend large poultices of flax seed meal over the lungs; whether that has any effect or not I do not know. Sometimes I use a cotton pad over the lungs. These so-called expectorants in the treatment of pneumonia have little if any effect. In the first place I usually see that the room in which the patient is lying is well ventilated, and have everything as aseptic as possible, and in the acute part of the disease use veratrum viride or aconite until the temperature falls, and after that I treat my patient with iodid of potash, and stimulants if necessary.

DR. PORTER, Kansas City, Mo.:—Pneumonia is a self-limited disease and I do not suppose any of us pretend to cut it short any more than we expect to cut short typhoid fever, and I don't see that there is anything particular to treat in pneumonia except its complications. So far as I know we have found no antidote to the poison which at the present day we believe to be responsible for this disease. The congestion of the lung is the product of this poison, consisting first in the inflammation and then in the constitutional symptoms from the same. I have seen a good deal of pneumonia, and I have been through the line of bleeding and through the expectant plan. A few years ago when we treated pneumonia by bleeding I was in a malarial country and we never thought of treating pneumonia without quinine, because they were all suffering from malaria, and our success was wonderfully good. We gave it for its physiological effects, and we resorted to venesection, and I don't know but our patients got along just as well as they do now. But the wave came along and said no more bleeding, and we stopped it and gave other remedies. I advocate the use of alcohol in certain stages of pneumonia. It being a self-limited disease our object is to prevent death if possible, and if we have failure of the heart I don't know of anything that is a better sedative stimulant than alcohol; I look upon it as a cardiac stimulant and sedative if given in certain quantities. Our object in treating pneumonia is to bridge it over until such time as this toxic poison has exhausted itself, and if we can sustain the life of the patient until that is brought about he will get well, and I don't know of any remedy that is equal to alcohol in that respect; it is certainly better than all expectorants. I can see wherein strychnia, which has been advocated, is a good thing; it is a good bitter tonic and has its effect upon the nervous system, but certainly it could not compare with alcohol in bridging over the dangerous period in these cases. The great trouble with many cases of pneumonia reported unfavorably is that these people who are reported as having died of pneumonia have really died from some sequelæ of pneumonia.

DR. JENKS, Keokuk, Ia.:—Statistics are misleading for the reason that fifty years ago they knew nothing about physical diagnosis, about percussion and auscultation, and three-fourths of the cases of fatal pneumonia in old people were overlooked or were called deaths from old age. Then in children and a vast number of other cases where the diagnosis was obscure the physician made a faulty diagnosis, so I think the statistics as regards the mortality in the treatment of pneumonia should be thrown aside. Nitroglycerin is a very good remedy in these cases. In regard to the treatment of pneumonia by stimulants, we rely too much on alcohol. I believe in drugs, I do not believe in expectancy; it has done a great deal of harm in all diseases of late years; it has done much harm in pneumonia and typhoid fever. If I had typhoid fever I would much rather trust my life to a physician who had confidence in the right kind of drugs than to one who thought it his duty to take my temperature and pulse, and would say go ahead and ventilate the room. There is a great deal in getting a fair start in pneumonia. If you are called early, you can do a great deal to break up the congestion; you can make a case very much lighter by treatment, and I believe some of the benefits that it was asserted came from blood letting in the old days were due to calomel. Calomel has a place in the treatment of pneumonia that ought to be recognized; I do not believe in salivating a patient, but in giving it pretty freely and in that way lessening the blood pressure and the temperature, and the heart will not palpitate so in the second stage. In the stage of hepatization you have to be very careful; ammonia salts with careful regulation of the diet does very well for that, but when the pulse creeps up, nothing in the range of materia medica is so beneficial as the judicious and continuous use of nitro-glycerin. I have been using it in 1-100 drop doses every two or three hours and sometimes oftener, increasing it each day, watching its effect on the pulse, giving it in connection with digitalis and strychnia. These remedies I rely upon in the last stage of pneumonia when I fear my patient is going into collapse. That treatment with me has been much more successful than the alcoholic treatment I was taught to use. When the profession begins to study the disease they will rely upon these three remedies much more. I use alcohol in some conditions of the system. I am a firm believer in drugs, but not in giving large doses of antipyretics such as antipyrin, phenacetin or any of those remedies, or what is worse, heroic doses of quinine; they are much more dangerous than the heart sedatives and antipyretics we are accustomed to be afraid of.

Dr. R. R. Ross, Buffalo, N. Y.—I believe it is necessary to classify pneumonia before we can treat it scientifically; I think it ought to be divided into classes referable to the heart, to the poison of the disease, and to the lungs. Cases referable to the heart ought to be treated entirely different from those which are suffering from the poison of the disease, the symptoms are different and the remedies employed in one case do not apply at all to the other. The question of bleeding has been discussed and reference has been made to modern therapeutic agents which will take the place of it. I have seen nitroglycerin used in these cases with excellent result; I saw a series of fifty cases in which it was used and they seemed to be better. This drug has a dilating effect upon the arteries and also a stimulating effect upon the heart.

Dr. Scott, Cleveland, O.—I believe that the etiology of this disease may not always depend upon the same condition. As an illustration: If I take a frog and prop open his mouth so he cannot breathe, he will have conjestion of the lungs very soon, and if that condition continues long he will die of conjestion of the lungs; where is your pneumococcus? it has reached lung tissue except from the air; there is some other reason for the conjestion in that case. I have frequently seen firemen, exposed to hot blasts, breathing in heat and smoke from a burning building, die from congestion of the lungs, from pneumonia really. What is the etiology in that condition? Does that depend upon the absorption or introduction or inhalation of the pneumococcus? There is no doubt in my mind that it comes along after the pneumonia; if you examine you will find what you call a pneumococcus, but that is secondary, it is not the primary cause. In regard to treatment, if we can reduce the conjestion in the first place our patient will get well, and if it has gone on to hepatization with a pulse of 120 and a temperature of 105, we have remedies by the application of which we can diminish the frequency of the pulse and reduce the temperature and the conjestion in the lung. When I commenced to practice medicine I used to bleed, and I do not believe that bleeding in selected cases is unphilosophical; I have no hesitation in bleeding a man except that it is out of fashion, and to advocate bleeding a man with pneumonia is thought to be barbarous.

Dr. Reyburn, Washington.—It seems to me the gentleman has struck the keynote in the treatment of pneumonia. We have a mortality from pneumonia in men in the prime of health, full of blood, full of life and vitality; these men are stricken down with pneumonia and in two or three days are dead. Now why should this be so, why should men in high vitality and health die suddenly from pneumonia? My belief is that in that type of cases a reversion to the old treatment, including blood letting, is not by any means unphilosophic, for the reason that these men as a rule have a bounding pulse, a free action of the heart filling up all the air cells of the lung and they die mostly of stricture. In these cases I give aconite and veratrum; then in this class of cases we bleed to cure inflammation, we treat a symptom that is killing our patient. Here is a man whose lungs are half filled up, the heart is pumping the blood with greater force than in health and after a while he becomes blue, and in that case I consider the treatment by aconite or veratrum or blood letting as good. But if we take a patient who is broken down from chronic alcoholism, such treatment would be fatal. We should not treat all patients alike. My experience reaches back for thirty-seven years, and I do not think we treat pneumonia as successfully as we did thirty-six years ago. We ought to divide these patients into two classes, and these two classes should be treated very differently. I know that we vastly over-use alcohol; I have seen a man bleed to death from gunshot wound with resulting pneumonia, under treatment by alcohol. At the same time let us not go to the other extreme; Arthur Helps says, when men try to swing the pendulum to one side, they swing it so far that it is apt to carry them to the other side.

Dr. Martin, New York.—We are called to a case of sickness, a man has had a premonitory chill, we find a pulse of 120 and we diagnose pneumonia. What are the conditions? The pulse is above its normal standing and it is pumping into the lungs 50 to 70 times more than it ought to. Suppose you had a tub of water with a supply pipe and a waste pipe going into it, you increase the size of the supply pipe but not of the waste pipe and you get an overflow. That is all there is of pneumonia, the rest is results. Control the pulse, you may use your own arterial sedative, but use it then and there, bring that pulse down if you can to 80 and all fear of pneumonia will be gone; if you bring the pulse down to 80 and hold it there, you will never lose a case of pneumonia. So long as the pulse is controlled the system is near its normal condition and there is no congestion, and if there is no congestion, there will be no hepatization, and no consolidation, and if there is no consolidation there will be no death. You must not let the pulse drop too low. I use one hundredth of a grain of nitroglycerin and I say to the nurse, if the pulse goes beyond 80 give the arterial sedative, if it goes below 65 give this, and I hold the pulse there for the first few days, and I never lose a case of pneumonia. A short time before I left home a man died with pneumonia and across the street another case was taken. The mother felt that she must lose her son because the man across the way had died. I said to her, "Good woman, do as I tell you and if this man dies I will pay the funeral expenses and give you a house and lot." I showed her how to count the pulse and on the sixth day the boy was lying on the lounge, he could not be kept in bed any longer.

Dr. George W. Webster, Chicago:—In those cases referred to where there was effusion after pneumonia, it was where the lungs had been affected by the pneumococcus, and later there was infection of the pleura by this same organism, and then effusion.

I have treated seven cases in the last sixteen months in patients ranging from three to forty years of age, and have treated all by one method, that of aspiration and then washing out the pleural cavity with an antiseptic solution, which was a saturated solution of boric acid, at each sitting

Sometimes there would be from one to six or eight fillings of the pleural cavity with this solution, to be immediately withdrawn. All of these seven cases recovered; in two cases one aspiration and washing was sufficient to effect a cure; in three cases two aspirations were necessary, and in three cases three, but in all of these cases there was complete and perfect recovery. In one case, where there seemed to be a considerable amount of cheesy adhesion, I injected a solution of the extract of pancreas, left it in position for nearly three hours, then aspirated. This pus had been digested, was soft and in a fluid condition, and was readily eliminated from the chest by the aspirating needle. I found that apparently the younger the patient, the more likelihood of recovery with one aspiration. It has been pointed out by a German surgeon that a large majority of these cases in children will get well with a single aspiration, without washing out the chest cavity; but it is simple, requires no anæsthetic, and can be done upon a person of any age, and it seems worthy of thorough trial. Seven cases is not enough to base any conclusions upon, but they point a direction in which treatment might be followed out to further advantage.

Dr. Martin, New York.—I can not help thinking that it is better to avoid or avert a calamity than to provide for one. Take the same line of treatment I gave for pneumonia, controlling the pulse so you do not get the congestion and you will not get the consequent effusion, and if you do not get the effusion you do not get the pus in empyemic troubles. In some thirty-nine years in medicine I have never had a case of empyema, although numberless cases of pleurisy, and I have treated them in this way, and it can not be that I get all the mild cases when I find my brothers in the profession having cases of empyema.

Dr. W. A. Batchelor, Milwaukee, Wis.:—One of the new points brought out is the bacteriological relationship of different cases of pyemia or purulent pleuritic effusions, and it is a line of investigation which I think should be more followed out and probably will be in the future; and following it out the results will help us a good deal, I fancy, in coming to a proper conclusion in regard to the efficacy of different modes of treating it. We are a little inclined to think, in America, that every case of empyema must be cut into and drained; I am inclined to hold that opinion very firmly myself, but looking at it from the bacteriological standpoint, some of these cases are due to microörganisms in themselves not so virulent, nor in the nature of their products, and if we can save more of them by a single aspiration it is going to lead us into light on that point. We can all recall cases in which empyema has been cured by a single aspiration; we can recall cases in which a cure has followed the formation of a broncho-pleural fistula where there has been only copious expectoration of pus and the individual has gotten well. Those cases lead one to modify a little the strong position he may otherwise take in regard to cutting into all pleuras. It all reflects back on this bacteriological investigation; if we find that some kinds of pleurisies are produced by one sort of microörganism and others by another sort, it may help us ultimately to know in which case we may incise and drain and in which we can look for a good result after a single tapping. We are inclined to look upon incision and drainage as a suitable operation; the results are almost always good, and yet it is more serious than tapping; and yet other forms of empyema are not cured by tapping, by incision and drainage; some multiple resection will not cure. Those are of the more virulent type, the tuberculous, and so on. In this connection I fancy it would be unsafe to draw conclusions from the clinical picture of the case and the history and variations of temperature, etc., as to the exact form of microörganism present, the only thing to do is to get some of the blood and have it examined in the laboratory. Another point I had in mind is this: No doubt all of us have had cases of effusion in Bright's disease, and I think they are almost always uniformly serious, and that puts them out of this category. Bacteriological investigations of pleurisies may lead us to better modes of treatment, and to form better judgments as to what we are accomplishing in our treatment.

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# THE ACTION AND USE OF TUBERCULIN.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY J. T. WHITTAKER, M.D.

*CINCINNATI, O.*

Opinions regarding the virtue of tuberculin still vary between extremes. Clinicians in general are dissatisfied with the results, while the pure experimentalists in the laboratory continue to observe direct effects. Koch maintains in force all his original propositions concerning its virtue, and his immediate associates and assistants attribute the failures to complications.

Tuberculin is known to be a product of the growth of the tubercle bacillus in a culture soil of veal broth containing 1 per cent. peptone and 5 per cent. glycerin. It is extracted with 40 to 50 per cent. glycerin so that it keeps almost indefinitely. I have some of the first, furnished nearly two years ago. It still shows the same effect as that obtained last month; that is, in dose of one milligram (1 per cent. solution), it excites its peculiar reaction in tuberculous patients.

We get some new light on the action of tuberculin from experiments with ordinary cultures and with the dead bacillus.

Straus and Gamaleia recently report a series of experiments concerning the pathogenic effect of various cultures of tubercle bacilli. Intravenous or subcutaneous injections of filtered bouillon cultures of Koch's bacillus produce in healthy animals only a slight reduction of weight, from which the animals speedily recover, but produce in tuberculous animals the typical reaction of tuberculin. The intravenous injection of tubercle bacilli, killed by heat, produces in rabbits marked emaciation and final death, and at autopsy there were found numerous miliary nodules in the lungs, which consisted of a granulation tissue rich in cells, but without giant cells, and inside of this tissue there could be demonstrated numerous but well colored tubercle bacilli. The injection of diluted, heated, dead bacilli leads likewise to death, but shows on section no abnormal condition. The use, however, of more diluted solutions produces a gradual immunity to the more concentrated solutions. After subcutaneous injection a large abscess forms at the point of injection. The authors remark that this property possessed by dead tubercle bacilli, of maintaining their appearance and capacity of color in the living organism, does not belong to other microörganisms. Neither does the property of producing the same changes as the living bacilli. Besides this local effect, dead bacilli may produce cachexia and even death.

The foregoing observations lead to the conclusion that the chief toxic product of tubercle bacilli does not develop itself in the culture soil, but in the bodies of the bacilli, so that cure will require the elimination of the dead bacilli from the body.

The observations of Koch, Prudden and Hodenpyle also show that dead tubercle bacilli may produce important changes in the body. Vissmann, from his experiments, concludes that the dead tubercle bacillus acts as a highly irritant foreign body upon the animal organism. Injected into the subcutaneous tissue, it produces an abscess. Introduced through the auricular vein into the blood, it exercises a sharp irritation on the connective tissue elements, not only on the alveolar walls, but also on those of the blood vessels and pulmonary artery. In further course, it shows the same influence on the connective tissue of the liver, but not in such high degree. Still feebler is the effect on the kidneys, and in the spleen there is no effect.

The changes produced in the lungs and liver by the irritation of dead tubercle bacilli show, in the first weeks after intravenous injection, such a strong resemblance to young tubercles that it is impossible to distinguish them. They do not, however, in their later stages develop a tendency to undergo caseous degeneration.

Botkin concludes from his examinations of the blood: 1. After tuberculin injections there is an acute leucocytosis in which all forms of the white corpuscles participate. On the day after the reaction the number of leucocytes rapidly diminished, whereby probably the majority of them are destroyed. This is assumed from the increase in the number of blood plates. The appearance corresponds with the period of maximum reduction of temperature, and forms an analogy with the blood crisis of many acute infectious diseases accompanied with fever. 2. The tuberculin reaction occurs in the blood even in cases in which the temperature does not ascend.

Ribbert starts with the proposition that the tubercle bacilli under ordinary circumstances excite inflammation where they are. This inflammation is chronic and granulating. The tuberculous virus has an effect too slow and too little intense to be able to produce acute inflammation and suppuration. Exudative inflammation may occur in tuberculous centers, either when the toxic effect of bacilli is more intense, or the resistance of the tissue is less. Tuberculin reduces the resistance of the tissues.

Rodet and Courmalt reached the same results. Their explanation is that the tissue of the whole body is damaged to such degree by tuberculin as to become less resistant.

The tissues of the body are brought into a slow, granular inflammation by tubercle bacilli. When they are more markedly injured by tuberculin, and thus rendered less resistant to the tubercle bacilli, acute inflammation occurs with hyperæmia, transudation and emigration, and after this process in which tuberculin is eliminated from the body, regenerative processes set in. Hence the severe irritation of the body by tuberculin may produce increase of necrotic processes and may even lead to increase of bacilli, as has been observed in individual places, for instance by Baumgarten. A too lively increase of this process may thus induce suppuration, and such a loosening of the tuberculous tissue as to favor a reabsorption of bacilli, and thus the dissemination of the disease. This danger is recognized on all sides.

Thus von Heussinger sustains the injurious effects of tuberculin in Virchow's sense; that is, the excitement of fresh inflammation, of fresh caseating, infiltrating and miliary tuberculosis.

In accord with this explanation are the following experiments: In order to determine if the direct treatment of tubercle bacilli with tuberculin was adapted to influence their virulence and viability, tubercle bacilli were exposed for a long time in undiluted tuberculin at 37° C., then carefully washed in a solution of common salt, and introduced in rabbits intra-ocular, and in guinea pigs subcutaneous. The local inflammation was in the case of the tuberculinized bacilli in the beginning more marked than in the case of the bacilli not treated with tuberculin, but it disappeared more or less rapidly, and was followed by the appearance of the usual inoculation tuberculosis. The tuberculous ulcer produced in guinea pigs healed itself after a certain time, while that in the control animals showed no tendency to heal. Nevertheless the scars of the first broke open, and there developed a progressive local and general tuberculosis.

Hoppe-Seyler found that after injections of tuberculin, polycholia occurred, which expressed itself in icterus and increased excretion of urobilin in the urine. Hence tuberculin exercises a destructive effect on the blood coloring matter when given in relatively large dose.

On the other hand, as stated, the immediate workers with Koch attribute failures to complications.

Maragliano shows that tuberculin is effective only against tuberculosis, and not against mixed infection with pyogenic bacteria, streptococci and staphylococci. In this regard there is new, or at least more definite knowledge. It is known now that the whole character of consumption, *i. e.*, tuberculosis pulmonum, was not determined with the discovery of the bacillus tuberculosis. This is the keystone, it is true, but there are other stones, if not quite so important, which go to make up the structure. It is now known that tuberculosis of the lungs at least is not a pure process. In test tubes a culture to be kept pure must be secluded from the outside air. This seclusion does not obtain in the lungs. On the contrary, the tubes containing the cultures, *i. e.*, the bronchial tubes, are all open to the air, and are subject to constant contamination. So that human differs essentially from laboratory tuberculosis.

The contaminating bacteria of sputum have been recently investigated by Evans and Babes. Maragliano called attention to the possibility of their clinical signification, as did also Czaplewski, Ziegler and Thorner. Long ago Koch in his work, and after him Gaffky, encountered the tetragonus as an occasional associate of the tubercle bacillus, and spoke of its pathogenic properties.

Cornet on mixed infection, from whom these points are taken, says it is well known to every one who has experimented with tuberculous sputum in animals, that many of the inoculated animals, especially rabbits, often perish in a few days from septic processes. For years in his experiments he avoided the sputum of phthisis florida, and selected rather that of chronic cases, because experience taught him that such sputum rarely causes death by accidental disease. Of the twenty cases investigated postmortem, and so far as possible *intra vitam*, there occurred twelve times such a dominating presence of streptococci that its work in the production of symptoms could not be questioned.

Petruschky confirms this fact. He found the streptococcus dominant in the great majority of cases studied. In eight of fourteen cases, streptococci were found in the blood and juices of all the organs, whereby the significance of streptococcus infection is sufficiently demonstrated. Pasquale also demonstrated streptococci in various tuberculous processes from the dead body. Therefore the expression "mixed infection" is not exactly correct, because it is not a case of simultaneous invasion. It is rather a secondary invasion of streptococci; that is, it is properly a wound infection, and should be characterized as "a secondary infection." The inundation of the whole body with streptococci induces septicæmia. Hectic fever is distinguished by its morning remissions, by its more or less sudden evening elevation. It is the fever of erysipelas, acute suppurative processes, puerperal fever, produced by pyogenic cocci, in the great majority of cases by the streptococcus. Koch calls this seesaw record the "streptococcus curve."

"In septic phthisis tuberculin should not be used, because in the reaction, increased serous hyperæmia of the diseased lung favors the further invasion of streptococci. Streptococcus invasion is to be feared in every case where cavities exist.

"As Koch said at first: Early diagnosis; early treatment of the first infection. Here is where tuberculin unfolds its beneficence. Every neglected tuberculosis is a menace of the dangers of sepsis."

The discovery of tuberculin established the real epoch in the treatment of tuberculosis, as it constituted the first actual address to its cause. In beginning cases, it dislodges hidden depots of the disease, and makes manifest secreted centers. Thus it frequently makes a diagnosis which could not be established without it. As a therapeutic agent tuberculin has stood the fire of trial, so that its value may now be definitely stated. The use of it is contra indicated in hectic and hemorrhage, and in serious affections of the intestinal canal, conditions due to sepsis and best controlled, if controllable at all, by creosote and cognac. Tuberculin addresses only pure tuberculosis. It is therefore of especial value in incipient cases of lung disease, before asepsis has set in, and in deep seated or secreted latent cases of gland and bone affection. In these cases it soon puts a new phase upon the disease. Cases of anæmia, amenorrhœa, dyspepsia, crypto-genetic fevers, "colds," bronchial catarrh, so-called rheumatism, in reality beginning bone caries, recurrent or obstinate laryngitis, or other of the multiform manifestations of tuberculosis, whose real nature was only disclosed perhaps by tuberculin, gradually yield under its continued and judicious use. The beginning dose should be small, $\frac{1}{20}$ to $\frac{1}{10}$ milligram, and the remedy should be gradually increased, avoiding fever, slowly at first, more rapidly later, up to ten centigrams. It should be introduced subcutaneously always—with the Koch syringe, which should be disinfected with absolute alcohol before and after each use—about the back of the trunk, not oftener than every other day, and always in the morning, that the effect upon the temperature may be studied during the day. Perfectly quiescent cases should be let alone on the principle, *quieta non movere!* On this principle, the surgeon sometimes compromises with an abscess about the hip, and always splints the spine in vertebral caries by a plaster jacket or other fixed support. But here, as everywhere, cases must be individualized. Gland and bone tuberculosis is more apt to be a pure process than lung tuberculosis, which is, as stated, complicated as a rule with subsequent streptococcus infection. The apyretic is the best period for radical address by tuberculin, and cases which show paroxysms or continued récurrent attacks of fever should be subjected to this treatment. The tone and vigor of the body usually rapidly improve under the use of tuberculin, and the uncontrollable evils of septic invasion and the long, slow tortures of marasmus from later dissemination, may be averted in this way.

### DISCUSSION.

**Dr. Charles Dennison**, Denver, Col.—I heartily agree with the author, and my experience has been considerable. A year ago I reported on forty-eight cases, before the Gynecological Section, and the successes I reported were attributed by some of the gentlemen to the advantage they thought the climate had in these cases. I have not a doubt as to the correctness of that judgment, and the fact of that aid and the influence that exercise has in these cases, leads me to believe that ventilation of the lung whch is produced by exercise, is an important point in the use of tuberculin. I agree with the author that tuberculin is suited to selected cases, especially of the incipient kind, with this additional proviso, that the case which has advanced to the third stage is equal to one which is incipient, for half of the cases I have treated have been in the third stage. I have had some experience with Klebb's tuberculosin; I have used it in all cases of high fever where I was doubtful about using tuberculin. Commencing with a fifth of a milligram you can work rapidly up to thirty and sixty milligrams. A gentleman living in Milwaukee had a boy seventeen years of age who three or four months ago was growing rapidly ill, wasting in flesh and becoming emaciated. He had a hacking cough but no expectoration, there were no bacilli to be found in the sputum. When he arrived in Denver he had a temperature of 103½ degrees in the afternoon and in the morning it was nearly subnormal, the average being 101 degrees. I was at a loss to know what to do, as I could not discover any bacilli, but I was positive it was tuberculosis; there was solidification of the lower half of the right lung, and with the night sweats and progressive emaciation it could have been taken for pneumonia. I commenced with tuberculosin and the result was remarkable. The average temperature in the afternoon is 101 degrees, the boy is pitching quoits, riding on the electric cars and going to the mountains. I have worked up to 110 milligrams of tuberculosin. I would not dare in such a case to give tuberculin. The tuberculin treatment has been quite as good if the cases were equally well chosen. I have come to rely upon tuberculin as one of the best remedies in selected cases of tuberculosis. The intrinsic value of tuberculin is especially shown in a case of knee-joint disease which had been treated in the hospital as a case of chronic rheumatism, the limbs had been put in splints and the lady kept in a chair for three years. Last July in Vermont, I made a diagnosis of tuberculosis, although there was no expectoration and no history of lung trouble except that the lady, who was 26, when she was 14, had been sent away from home and got well of some asthmatic or throat truoble. I gave her twelve milligrams of tuberculin in ten days. The next February she had an attack of the grippe, which was rather severe and ended in the enlargement of the glands at the side of the neck. She went to the surgeon who had taken care of her before and had the glands removed. A careful examination of the gland was made and giant cells with tubercle cells in the center were found. I wrote to the young lady that this was a confirmation of what I had told her and she must come out to Colorado and we would try and cure her. She came out last year and I commenced treatment with tuberculin, she continued to have reactions up to twenty-five milligram doses, since when she has had none. She came there on crutches with her wheel chair. I worked up to 110 milligrams, eased off and worked back, giving one dose a week of seventy milligrams. After the dose of 110 milligrams she walked five blocks in Denver, and she goes home without crutches. The cause of her trouble I believe was tubercular joint disease, both knees were swollen.

The difference between tuberculin and tuberculosin is that the albuminous materials are taken out of Koch's tuberculin to make Klebb's tuberculosin; it has about one-fortieth the strength of tuberculin in its healing power but it does not cause fever, it is safer to give where there is fever. There are two kinds of fever which tubercular cases show, one the septic influence of the ptomaines or bacillus, the other the fever which is due to the effect of the remedy, which is a guide in its uses. There is a septic condition and a tuberculin fever which we ought to distinguish.

Dr. J. T. Whittaker, Cincinnati, O.:—No one will dispute that climate very markedly assists in tuberculosis or any other case. When my patients do not get better under tuberculin I send them away; I have known a great many cases to go out to Colorado.

As to tuberculin and tuberculosin, I do not think there is much difference. I like the fever of tuberculin; it is an indication of the dose the next time. I can assure all the gentlemen if they try tuberculin they will continue to use it in these cases. If they will only use the Koch's series and not try to improve upon Koch's method, they will come to the conclusion he had at first. The syringe is nothing more than an exaggerated dropper; it has a rubber bulb, but no piston or plunger. Absolute alcohol is first drawn up into the syringe, and then the dose, and only takes the time of a few seconds. If the precaution is taken to draw the alcohol into the syringe again it disinfects it absolutely. I have used it every day for several years and never got the least infection. What impresses me most is these cases in which we can make an accurate diagnosis; where the individual seems to be in a decline with chill and fever every week or two, which we used to call malaria, and sometimes would yield to quinine and sometimes not. I use tuberculin in all of these cases, and they are put on their feet in two or three months; it does not take two or three years, as is commonly believed. If there seems to be any danger about it, a small dose of one-twelfth of a milligram can be given. We usually make the diagnosis with half a grain of this 1 per cent. solution in two or three days. You give the mother the thermometer and teach her how to use it; to take the temperature about one o'clock and again in the evening, and give you the record. When the diagnosis is established the first thing the physician notices is the difference in the tone of the patient; they feel better and begin to look upon the physician's visits with pleasure. We soon find that we can almost double the dose every other day, and in the course of a month the patient begins to gain courage and feels better in every way; sometimes there is reduction in weight and bad feeling, then we must go slower and reduce the dose. These patients do not show the same tendency to relapse as those who get well under creosote and other kinds of treatment. I have read of cases where relapse occurred, but it impressed me as not so often under tuberculin as other kind of treatment. I believe tuberculin is a specific of tuberculosis; I feel confident that the remedy is gaining ground and establishing itself. We see a flood of light thrown upon the failures in the fact that the cause was a streptococcus and not a tubercle bacillus at all. The tubercular bacillus multiplies very slowly; it is very different with the streptococcus, that floods the whole body. Anybody who has seen those beautiful cross sections of muscles filled with streptococci knows what it is, and why the patient has a fever they call in Germany the streptococcus fever. We have tried to fight the streptococcus with creosote, but we have no remedy that will destroy it.

Dr. Montgomery, Pennsylvania:—We country doctors do not know much about tuberculin, and we do not like to give a medicine unless we know something about it. What are its constituents and chemic properties?

Dr. J. T. Whittaker, Cincinnati, O.:—Tuberculin is the product of the growth of the tubercular bacillus in a certain salt borrowed from the body of the bacillus and cultured in glycerin. The action is to produce a real inflammation and make the tissues less resistant. Ordinarily we treat the condition by making the tissues more resistant, but the tuberculin goes at it the other way, and excites a real inflammation, and after it subsides the degenerative process again sets in; then of course the physician is dealing with theories not as worked out by himself, but by those who have studied them for years. That is the way in which tuberculin is presumed to act; there is no definite knowledge on the subject, especially in those obscure cases in which it is difficult to determine the cause. I know the lack of confidence in the remedy arises from lack of use of it, and I am convinced that if a physician would have a syringe and use it in this way he would at least know whether he had a case of tuberculosis or not. Tuberculin clears up the diagnosis. I have seen cases where the injection of tuberculin did not create the reaction, and I infer the diagnosis was wrong. Tuberculin will give the reaction and nothing else will. The product which is derived from any other bacillus does not have the same effect; it is so peculiar and so positive that anybody can read the signs.

Dr. Whiting, Janesville, Wis.:—I would like to ask Dr. Whittaker whether his experimentation has been done in private family practice or in public institutions?

Dr. Whittaker:—In both. I always have from fifteen to twenty cases under my treatment at the hospital, and I suppose as many in private practice.

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## BRIEF CLINICAL MEMORANDA.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY HENRY D. DIDAMA, M.D.

SYRACUSE, N. Y.

1. *An Available Catheter Lubricant.*—Olive oil, glycerine, cosmoline, are the ordinary materials used to lubricate the catheter. As a rule they are satisfactory, although the oil parts with its sweetness if kept too long, and the glycerine irritates certain urethras outrageously. Cosmoline is pleasant enough, but the bottle is apt to be misplaced or empty when needed. Moreover, there are nice elderly people who have chronic retention from enlarged prostate or other difficulty and who are forced to draw their urine because they can not void it.

They are well enough to go to the store, shop or church, and they always carry a catheter or two curled up in their pockets. But a bottle, in addition, is sometimes mussy and always a bother; and so, rather than carry the needed emollient or call on a neighbor for it, many a poor wretch remains reluctantly at home.

But he need not stay at home, nor take his bottle, nor call for assistance. Saliva is an excellent substitute for any of the articles mentioned.

The objector, who, quite likely, has never used nor prescribed, nor even heard of this material, at once calls attention to the epithelia and animacules which abound in the oral cavity. Saliva, he claims, impregnated with these objects must necessarily introduce dangerous septic material into the urethra and bladder and cause a troublesome if not fatal cystitis. But saliva is not necessarily poisonous. Ever since the time when Lazarus sat at the gate of Dives, dogs have cleansed and insalivated the sores of beggars and their own punctured wounds. without harmful effect. Indeed, it never was the hair of the dog, but his saliva, that cured the bite.

Remembering now the diet of the ordinary dog, we can easily imagine that human saliva is at least as cleanly as the canine variety, and that the oral microörganisms are scavenger bacteria.

However, this may be, experience is the best teacher. And numerous persons, who have had practical personal knowledge, stand ready to testify that the lubricant which they can easily have on hand from the reservoir at their tongue's end is not only available and harmless but preferable to any other which they have employed. (Of course the saliva harbored by foul mouthed people is not commended.

*2. Preparing Hemorrhoids for Injection.*—Every one is familiar with the radical treatments which have been and are in vogue for piles:

The ligature, following transfixion and followed by excision; the clamp, the cautery, the caustic; Whitehead's operation, which removes once for all the hemorrhoidal area; and the injection of carbolic acid which permits the patient to keep on foot and attend to his business. All these have their advocates, excellences and drawbacks. Whitehead's, with Marcy's modifications, is probably the best.

Carbolic acid injections have, without doubt, (even after making allowance for the false claims of peripatetic quacks) cured many cases. But these injections occasionally do much mischief. The material used sometimes extends up the hemorrhoidal veins, causing intense and prolonged pain and widespread and dangerous sloughing.

As so many pilebearers are business persons, who can not afford, or are impatient at, a week's restraint in bed, it is unfortunate that so much peril threatens the quick and easily performed and comparatively painless injection method.

It is pleasant to know that in many cases this peril can be averted. In this wise:

1. Anæsthesia by ether or A. C. E.
2. Abundant digital dilation of sphincter, which of itself is often a prolonged relief.
3. Bringing down the tumors.
4. Ligating those which have a suitably small pedicle and tying the ligature with a bowknot.
5. Injecting into each tumor, according to its size, six drops or so of this or a similar mixture: Carbolic acid one part; 8 per cent. solution of cocaine two parts; glycerine two parts.
6. Untying and removing the ligatures after a thorough admixture of the injection with, and coagulation of the blood in, the tumor, which may require from five to ten minutes. This retention of the blood in the hemorrhoid, till after thorough admixture and coagulation have taken place, prevents dreaded extension up the veins and to neighboring parts; the cocaine moderates the pain; the pile hardens and in due time drops off. But as many hemorrhoids have not a suitable pedicle for temporary or permanent ligation, and as dilated venous radicals may be left which will develop into future tumors, the device described is limited in its application and can not always give quite the satisfaction and relief from apprehension which the Whitehead operation affords.

*3. Facile Reduction of Prolapsed Hemorrhoids.*—Much suffering is occasionally the result of protruding piles. The victim usually manages, by taking compound licorice powder at night or some saline in the morning, to obviate constipation. Or he uses an enema after breakfast to secure a movement. The hemorrhoids descend but they are replaced with little difficulty. Sometimes, however, they are very much enlarged or sensitive, and long-continued efforts to put them back prove a failure. The sufferer regrets that he has not heeded the advice of his neighbors and submitted to an operation. Regrets, however, are unavailing to give present relief. He sends for the family physician. The doctor works faithfully, inflicting much pain, and happily accomplishes his object. But not invariably. Now and then his best efforts are fruitless, and anodyne ointments and hot cataplasms are called to his aid. Meantime the suffering continues with little amelioration. The soothing influence of the applications becomes manifest after a long time and the wretched tumors are put back where they do the least harm.

A repetition of this misery and delayed relief is not an infrequent occurrence. Still the long-suffering victim dreads a surgical operation of any kind, and tries to hope that each attack will be the last.

Now it may be some satisfaction to the doctor, as well as great comfort to the patient, to know a comparatively easy method of effecting reduction. This is it: Posture may be important, but the best one is not always required. In moderately severe cases the patient may be on his back with knees drawn up. If the hemorrhoids are very tender from strangulation and manipulation, cocaine should be applied till analgesia is fairly well established. Then the parts should be thoroughly lubricated with vaseline, and the tips of three or four fingers of each hand applied to the purple projections. Steady pressure is to be applied while the patient is ordered to press down as he does in the defecation of hardened feces. Instinctively, and almost invariably, he shrinks and draws away from the pressure on the painful swellings, at the same time puckering the already too contracted anal orifice. But when he is made to comprehend that puckering renders reduction impossible, while resolute and persistent straining down relaxes and opens the orifice and allows the swellings to be forced back into the rectum, often semi-instantaneously, he will govern himself accordingly. Sometimes the performance can be terminated more speedily by having the patient assume a squatting posture, after the preliminaries have been attended to. Then the straining down seems to be more thorough and efficient, and the piles, liberated from constriction, slide homeward with little compulsion.

This is the facile reduction of prolapsed hemorrhoids; and the patient can be taught to accomplish it early and easily without the aid of the physician.

*4. Ready Relief for Lumbago.*—Pathologists have not agreed as to whether lumbago is myalgia, rheumatism or myositis. The arguments in favor of each theory are so nearly balanced that the busy practitioner can afford to let the discussion continue while he attempts to cure his patient.

The symptoms of the complaint will not be described. They are well known to you all—emphatically to those who have experienced them. You do not mistake calculus or nephritis or abscess or spinal disease for this disorder. You are doubtless familiar with the treatment commended by Motherwell a hundred years ago: blisters and issues on the thighs, suitable evacuations, opiates and mercurial alteratives.

You may not know that the Rev. John Wesley, in his Primitive Physic, spoke favorably of a plaster to the back and "balsam of Capivi." But you all have read the formidable list of remedies in the very latest text books, and you may have employed many of them in dismal rotation. I call to mind a few samples: Prolonged rest: sulphur, externally and internally; guaiac; dry heat; moist heat; liniments; poultices; salicylates; hypodermics; faradism; galvanism; belladonna plasters; mustard; iodide of potassium.

These, and more than these, have been and still are highly commended. Under their vigorous, consecutive and long-enough continued use, favorable sequences have actually occurred.

The writer of this paper has no condemnation to pronounce on any portion of this treatment. But he does not employ it. For ten years or more, personally he has experienced, and very many times he has afforded ready relief by the application of large dry cups along the entire lumbar region. The patient, hardly able to walk or even move, is seated on a chair with his bared back turned towards the operator. If obtainable, four conical glasses (such as are used to collect the sediment of urine for microscopical examination) may be employed to hasten the operation.

With a little swab dipped in alcohol the conical cup is mopped out, the alcohol is ignited and the cup applied. The procedure is continued with the other cups till the four are *adherent at the same* time. In five minutes or so their position may be changed, and the entire operation need not occupy more than fifteen minutes. The result is almost magical. In nearly every instance, the patient rises from the chair, walks about with ease, bends his body without pain in all directions, and blesses you with a cheerful recompense. If he needs any tonic or any alkaline diuretic or laxative, you prescribe or dispense and he departs rejoicing. You order him to return in a day or two if the difficulty reappears; but the relief is usually not only prompt but lasting.

*The blood is drawn from the depths of the congested and painful muscles to the surface;* and if occasionally a repetition of the operation is required, the patient, who has been made in a few minutes more comfortable than, under the old plan of treatment, he was in weeks, never begrudges the time or expense.

To be entirely satisfactory, the conical glass cups should have a diameter at the mouth of three and one-half or four inches and a depth of six inches. If these cannot be obtained, deep goblets or beer glasses may be used. My friend, Dr. A. S. Edwards, once employed some enormous cups (called "schooners" I think) and gave me joyous relief after a long period of useless pottering with the orthodox remedies.

If the little globular cups with collapsible rubber attachments are substituted for the large glasses, the result will be unfavorable and exasperating.

DISCUSSION.

Dr. Frank Billings, Chicago:—If anything has made modern surgery successful it has been cleanliness in the fullest sense of the word, without the use of so-called antiseptics. Clean water is now used where formerly antiseptics were used to kill so-called bacteria. In the use of saliva as a lubricant. to my mind the patient is in constant danger of infecting himself, and I speak of this from experience in spite of my being a younger man than the reader of the essay. A very prominent gentleman, while in office suffered from abscess of the prostate gland. He was of the age when he had this enlarged hypertrophic gland that he suffered severely from the abscess, with consequent inflammation of both testicles, and this was repeated many times. He finally came to me and investigation showed that for years, ever since his trouble began, he had been using a catheter to empty the bladder and had used saliva as a lubricant because it was at hand. He had infected himself, and through reformation of his methods, not only in not using saliva but teaching him how to clean his catheter and even to go to the trouble of getting some lubricant that was known to be clean, I stopped it entirely. That has been my experience in a few years with three old men, and I cannot help protesting against that part of the doctor's paper. The saliva is full of bacteria and while it contains non-pathogenic bacteria, it also contains pathogenic bacteria and sometimes contains pus, making bacteria. If an individual has to use the catheter he ought always be taught to cleanse the instrument and to use some aseptic lubricant.

Dr. Jenks, Keokuk, Ia.:—I like the doctor's terse, rather short and numerous way of putting these facts. There are a great many things to be learned from just such a paper as that. We do not pay enough attention as general practitioners to this subject. I believe more men are suffering from the general effect of hemorrhoids than any other disease that afflicts humanity, and physicians are apt to pass it over and say take a little powder, and let it go. We ought to educate the people to the idea that there is a cure for hemorrhoids. They cause much mortality by complicating a case when the patient gets sick, and the sooner a man gets cured of his hemorrhoids the better his chance for life as well as happiness. For that reason I think the part of the paper speaking about simple matters and making men comfortable without operation is a very important thing to come before the Medical Section of this Society. I do not believe in carbolic acid injections in the ordinary way; they do more harm than good and are more painful than the electrode; the way the doctor uses it it has probably less danger. There is no getting around the fact that if you take a case and give an anæsthetic, ligate the hemorrhoids and cut them off and put the patient to bed, it is better than giving carbolic injections.

Dr. Chas. Dennison, Denver, Col.:—I was going to say something on the same line, because I have lately had an experience which forces the subject on my mind. We have a quack institution in Denver from which a patient came to me about four months ago who had an ulcer in the posterior pharyngeal space, and upon examination I found ten tubercular bacilli in the field. The history was he had been under that institution's care for five weeks, and they had used the same instrument that had been used on other patients in applying something to the throat, and the throat was constantly getting worse. We have made a great many examinations, and I kept a careful record of my cases by examination of sputum, and the frequency with which I have found from one to 1,000 bacilli in the field is so uniform that the chances of getting tubercular infection would not be unimportant in using saliva as a lubricant. We do not know the condition of the changes of the body which precede the tubercular bacilli, and until we do know that we can not be perfectly sure what condition may exist in the saliva that may be favorable to infection by tubercular bacilli. It seems to me the necessity for the innovation is so slight, and there are substances that would be nearly as handy, that it would be better perhaps not to run the risk of such device.

Dr. Auld, Philadelphia.—I came in as the speaker began to read on the subject of lumbago. The methods of treatment recommended are those which usually obtain. I was disappointed that nothing was said in regard to the probable pathological conditions which maintain in that class of cases. We all know they are very closely associated with rheumatism and the rheumatic tendency, and that might be sufficient for the giving of salycilic acid or potassium iodid. I know that the faradic current rapidly or slowly interrupted is very efficient, sometimes a single sitting gives all its irritating effect upon the nerve and its stimulating action upon its protoplasmic cells which compose the muscular structure and the other associated structures. Good results are frequently observed from the use of acupuncture, that is the introduction of the single needle; it is certainly a very excellent method of treatment but is not always successful on account of its decidedly local influence. There is another method of acupuncture with which probably you are familiar; I refer to the instrument invented by Bohnsheim fifty or sixty years ago. It consists of a small disc containing thirty needles, penetrates the flesh three-eighths of an inch. By having that disc connected with a spring, we make a spot about five-eighths of an inch in diameter. A half dozen of these can be made in a few moments. That answers the same purpose as acupunture, is more successful and without danger.

Concerning the probable pathological conditions we have to deal with in the muscle substance which is composed of protoplasmic cells, we have encircling those cells the lymph, and if we give salycilic acid or iodid of potassium or other medicine, we depend upon its action, not through the blood but through the lymph. The medicine is given up by the blood and distributed through the system. The protoplasmic cells which are involved have become deranged, and from their inability to throw off carbonic acid and other products the metabolic processes are hindered, and we have more or less swelling and pain. We have in addition the fascia covering the cells and the tendons which are nearly in co-extension with the fascia. The fascia cells and tendons are not so active in their nutrition as the protoplasmic cells of the muscles. Suppose we give a medicine which will immediately stimulate those protoplasmic cells. We know that mercury affects especially the liver, and we know it does that through its continuous absorption until it has permeated through the system. We have a remedy in the poison, sumach rhus.

Dr. H. D. Didama, Syracuse, N. Y., in closing the discussion, said: In regard to the use of saliva, I never once recommended it. I would not recommend it; I spoke of it as an available lubricant mentioned to me by patients who had used it for years. I was taught when a student that in using the catheter in a woman no exposure was to take place, the catheter is clean, the meatus is clean and the catheter is never permitted to touch anything, is not laid down on the bed anywhere, but passes directly into the urethra and every precaution taken for cleanliness, so that cystitis never occurs from the use of the catheter. I am glad this question has come up. I said in regard to it that a person with a foul mouth should not use the catheter in that way.

In regard to lumbago, the title of that portion of my paper was "A Ready Relief for Lumbago." We all know about these things that have been mentioned and know about different views of the pathologist. I don't care about the pathology; for ten years I have been helping patients who came to my office, and have had lumbago myself. What we want to do is to relieve the patient if we can and let him go about his business. A friend in New York telegraphed me to come, because he knew about the treatment with these large cups. He tried to have his physician apply them, but this young physician said he did not think the treatment in the Bellevue Hospital could be improved upon by any physician who lived in Syracuse, so he would not apply them. I went and in ten minutes the patient was relieved.

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# THE TREATMENT OF ENTERIC FEVER BY COLD BATHS.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY W. GILMAN THOMPSON, M.D.
NEW YORK.

The treatment of enteric fever by cold baths according to the Brand system, *i. e.*, by sudden immersion in cold water accompanied by vigorous rubbing, has been slowly but steadily gaining adherents in this country. My own experience with it includes ninety-five cases treated during the past three years at the New York Hospital, where Dr. Peabody first employed the system, and at the Presbyterian Hospital, where I introduced it last year. While the number of cases thus far treated at these two institutions is not yet large enough to furnish absolutely convincing statistics, the figures already obtained are certainly significant. Thus 340 cases treated by other methods at the Presbyterian Hospital, New York, from 1882 to 1892 gave a mortality of 17.8 per cent., and 501 cases treated by other methods at the New York Hospital from 1877 to 1889 gave a mortality of 19.4 per cent. Ten years of "expectant" treatment among 1,305 cases in various New York hospitals showed a death rate of between 20 and 30 per cent. (Delafield). By the Brand system the mortality of typhoid fever in both the above institutions has been reduced to 7.5 per cent. The cases herewith reported are not selected cases; that is, with the exception of patients brought into the hospital actually suffering from severe hemorrhage or collapse (and they number only half a dozen), the bathing or "tubbing" treatment is applied to all. The type of enteric fever with which we meet in New York city is usually severe. The New York Health Board reported 7,712 cases from 1876 to 1885, with a mortality of 41.28 per cent. The temperature runs high and hemorrhage and other serious symptoms and complications are of frequent occurrence. Moreover, many hospital typhoid patients do not enter the institution early, but wait until some urgent or critical symptom alarms them, and a decided majority are not seen before the tenth day, while many are received later. It is doubtless due to these causes that the mortality among patients treated by "tubbing" in this country is not so small as it is in the French and German army hospitals, where with many thousand cases it has fallen below 2 per cent.

The method of "tubbing" which I have employed is as follows: A portable tub on rollers is placed at the patient's bedside and partly filled by a hose with water at 70° F. When the patient's temperature rises to 102.5° F. he is given half an ounce of whisky and in a few minutes is lifted naked into the tub, in which there is enough water for the complete immersion of the body. In some cases cold water from a pitcher is poured upon the head. The patient is left in the tub for fifteen minutes, during all of which time he is vigorously rubbed over the entire body by two nurses, being turned from side to side occasionally to facilitate the friction of the back. He is then lifted on to blankets on the bed and rubbed dry. He is then given a glass of hot milk with malt extract and left to sleep, which he usually does, owing to the soothing influence of the bath. Between the baths the patient lies on a blanket and is covered only by a sheet, to favor evaporation from the surface, and in severe cases a compress wet in cold water and large enough to cover the chest and abdomen is constantly worn.

While in the tub many patients begin to shiver in five or ten minutes, but the bathing is persisted in and they soon cease to shiver. In young children, and exceptionally in adults with very poor circulation, a bath of ten minutes may be better than fifteen. Many patients, especially those in whom treatment is begun early, do not require over a dozen or fifteen baths. Often three or four a day are sufficient. In bad cases they must be given once in three hours both day and night. I have several times given eighty or ninety baths to one person. On only five occasions has it been necessary to discontinue the treatment on account of the serious objection of the patient. These were all exceedingly nervous persons (three of them men), and they objected continually to everything done for them, being equally intolerant of the Leiter cold coil and alcohol sponge bath.

One of the house staff always superintends the giving of each bath, and as a rule, with a little tact and encouragement objections on the part of the patient are readily overcome. To highly nervous subjects it is well to give an initial bath at 90°, to accustom them to the process. It often happens that the temperature, especially if moderate, is but little reduced after the bath, but as a rule a reduction of between 2° and 2½° F. follows and the temperature remains low for two or three hours, when it again may rise slowly. The temperature often continues falling after the bath. Even in those cases in which no reduction of temperature results, the patient's general condition remains phenomenally good. In fact, one scarcely ever sees the typical "typhoid condition" among patients who have been systematically "tubbed."

Delirium is the decided exception, not the rule, and all the nervous symptoms are lessened; the tongue is moist and clean, the digestion and appetite are remarkably good, tympanites is not prominent, the skin is healthy and active, bedsores do not occur, the urine is abundant, sleep is natural, nutrition is excellent, the facial expression is clear, the eyes are bright, the voice is strong, and the pulse is full and regular; in a word, the whole clinical aspect of the case is completely altered. The occurrence of menstruation need not interrupt the treatment, and in one successful case forty baths were given although the patient was five months pregnant.

Seven deaths occurred from the following causes: Four from intestinal perforation and peritonitis, two from hemorrhage and one from pneumonia. It can hardly be claimed that the baths precipitated either the fatal hemorrhage or perforation, for the majority of cases with hemorrhage recovered, and of the cases of perforation one had had thirty-six baths and another forty-three before that casualty ensued.

It is true that the "tubbing" has neither shortened the ordinary duration of the disease in the cases which I have treated, nor has it altogether prevented mild relapses, which followed in nine cases, but complications have been very few and the general result has been remarkably satisfactory.

Among the complications observed were intestinal hemorrhage in six cases which recovered, bronchitis, otitis twice, bursitis, ischio-rectal abscess, and the unusual phenomenon of a large abscess of the thyroid gland. Several patients who recovered had temperatures ranging above 106° F. before the treatment was commenced.

The other patients all did extremely well; several seemed to enjoy the effects of the "tubbing," and in those who were dull and lethargic on admission the baths had a truly wonderful effect in improving the apathetic mental condition and the pulse. The chief characteristic of nearly all the cases treated by bathing was the absence of the nervous symptoms so commonly observed, such as stupor or delirium, subsultus, etc. None of the cases received any antipyretic medicine while the bath treatment was in progress. Several patients complained of tenderness and pain in the calves of the legs and soles of the feet which gave considerable annoyance. The symptoms resembled a mild peripheral neuritis. Attempts were made to relieve the pain by the local use of a liniment of menthol, chloral and camphor, but without decided benefit. The symptoms subsided after a week or ten days. It is well known that such cases occur without the baths, and there was a similar complication at the same time in a patient who was not put into the tub at all. The symptoms merely seemed somewhat more frequent among those who were bathed. Those men who had hairy chests showed a slight papillary eruption around the hair follicles which caused slight burning. It might be avoided by cutting the hairs. Patients should pass their water before entering the tub, otherwise the cold is apt to make them micturate. With a large service it is not practicable, nor is it necessary, to change the water after each bath, unless the patient happens to void feces or urine in the tub. This accident would be a serious objection to the "tubbing," but fortunately it seldom happens.

The objection is often raised against the Brand method that the expense and trouble are too great. I have had the curiosity to form an estimate in regard to this matter.

Twenty-two cases taken without selection from the records of the Presbyterian hospital received collectively 372 tub baths, or an average of seventeen each. Seventy-two cases from the New York Hospital records received 2,052 baths, or an average of over twenty-eight each. At least half an hour is consumed giving the bath and caring for the patient immediately before and after it, and the services of two attendants and one of the house staff are required during most of this time. To give 2,052 baths would therefore occupy three persons for 1,026 hours or over forty-two days.

It is useless to undertake the Brand system unless one is prepared to carry it out with careful detail and much labor. It is true that this entails considerable expense and trouble, but the arguments so often used against it can not long prevail in face of accumulating statistics of greatly lowered mortality, now covering a period of nearly thirty years. On commencing the use of the Brand system I was quite skeptical in regard to its value, for experience some years before with the older method of putting patients into a tub of water at 90° F. and gradually cooling it without employing friction, had proved very unsuccessful, but I was soon converted by its advantages, and in the autumn of 1892 I had a personal experience with cold bathing which proved so valuable to me that I may be allowed to refer to it here. At that time I had a mild but unmistakable attack of enteric fever, and "tubbing" was commenced upon the fifth day. The baths were given for the most part at 75° F., but several were at 65° F. The former temperature I found very endurable, but the latter was uncomfortably cold. The baths had but little effect in reducing the body temperature but I always experienced immediate relief from the general aching and muscular pains which were particularly severe. It is not agreeable at any time to be taken out of a warm bed and suddenly immersed in cold water, but the after effect was so soothing and the favorable influence upon all the symptoms was so pronounced that the temporary discomfort was easily endured.

Delirium did not occur, and the digestion was excellent. I found that close attention to minute details added greatly to comfort. There was less shivering when the *back* was vigorously rubbed as soon as the water was entered, and the friction should be constantly and vigorously maintained over the entire body which is easily turned if completely immersed in the water. The alcoholic stimulation should be given at least fifteen or twenty minutes before the bath instead of immediately before, in order to secure its absorption in time to meet the shock of cold. On being lifted into bed again the body should be rubbed thoroughly dry and a refreshing sleep almost invariably follows. My experience also demonstrates the ease with which this treatment can be conducted in private practice. A large ready-made tin bath tub can be bought for a few dollars, and placed by the bedside, raised on two blocks of wood to a height convenient for the rubbers. It is filled by a hose from any neighboring faucet, and the same hose will siphon the water out again when desired.

In conclusion, I may say emphatically that under the Brand system in nearly all cases the patients are both subjectively more comfortable and objectively much stronger and better nourished than under any other treatment which I have followed. We should bear in mind that the object of the bathing is not alone the reduction of temperature, but is in great part directed to stimulation of the central nervous system through the agency of the cutaneous nerves, both by the sudden shock of cold and by the mechanical stimulus of friction applied over a very large surface. The method thus becomes a definite systematic treatment which has yielded far better results than any symptomatic or merely "expectant" plan.

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# SOME EFFECTS OF THE TAKING OFF OF THE CEREBRO-SPINAL PRESSURE. ANEMIA OF THE BRAIN AND WOUNDS OF THE SINUSES.

Read before the Missouri State Medical Association at Sedalia, Mo., May, 1893.

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It does not fall to the lot of every practitioner to observe the effects of reduced intra-cerebro-spinal pressure, and as cases of this character are liable to occur with greater frequency, now that cerebral and spinal surgery has become more popular, and is being more frequently done—it may not be amiss for me to detail the effects I have observed in a few cases.

The first was a case of spina-bifida, which I saw and examined in consultation in 1869. It was in a child less than a year old, and was in the lower part of the lumbar region. This consultation was with a view of determining what—if anything—could be done for its cure. It was decided to attempt draining off, slowly and gradually, some of the fluid that had accumulated in the sac, at the same time making pressure over the tumor in order to equalize the pressure on the brain. A slight puncture caused a complete collapse, and in less than twelve hours the unfortunate infant was a corpse—having died in convulsions. From that time on to the present I have had a very wholesome fear of interfering needlessly with the cerebro-spinal fluid, or of the cavities in which it is contained.

Ordinary acute cases of injury to the brain fortunately very rarely give us trouble. The arachnoid and dura mater speedily becoming aglutinated, and the subdural space is very speedily sealed up. The relief to the intra-cranial pressure, at the point where the bone has been removed, shuts the space up so that we rarely in acute cases have more discharge than is ordinarily found in wound secretions. Not so, however, with chronic cases, or cases where the cerebral mass can not so press against its bony covering. The following cases will forcibly illustrate the points I wish to make:

A little over three years ago Bertha Thalin was brought to me for a tumor on her head, that came there after a severe injury received when she was but nine or ten months old by falling down the stairway in the arms of her nurse. (At the time she came to me she was a little over seven years old.) The injury was on the left side of the head, a little above and in front of the parietal eminence. The right arm and leg were both partially paralyzed, and both were a good deal undeveloped. She was able to walk, but walked imperfectly with her right leg. She used her hand, but with even less celerity than the leg. Otherwise she was perfect in every respect. Bright, intellectual, cheerful and had enjoyed ordinary good health.

The tumor on the left side of the head was quite large, and occupied a space an inch and a half wide by two and a half long, and extended obliquely from above downward and forward. It showed no evidence on its surface of ever having been wounded. It pulsated violently. The pulsations being synchronous with the action of the heart. It was not tender to pressure, and when compressed produced a slight dizziness. Beneath the pulsating portion I could find no bone. However, bone appeared to form the wall of the tumor, except the space at its summit where the pulsations were most pronouncedly manifest. My diagnosis was meningeal hydrocele, due to some irritation within the dura mater, and that the displacement was the result of the hydrocele itself. I determined on opening the tumor, cleaning out its cavity, and trying if possible, to completely obliterate the sac. To this end I made an incision through the scalp, carrying it over the summit of the tumor, and found when I opened into the cavity of the tumor there was found an abundance of clear, limpid cerebro-spinal fluid. On attempting to farther explore the cavity, a piece of bone an inch and three-fourths in length projected down toward the brain at one end, and was loosely attached to the bony wall of the tumor by the other. These I separated and removed the bone, washed the cavity out, dissected out all of the wall of the sac that I possibly could, without taking too much of the brain substance away; closed up the scalp wound, with the exception of a small point for drainage, and dressed antiseptically.

I found, however, after a few hours that my dressings were exceedingly wet, and that a large quantity of fluid from somewhere was saturating the dressings, necessitating their removal and renewal. The general condition of my little patient was good, with this one exception. By a good deal of care I succeeded in maintaining the wound in a thoroughly aseptic condition, but found the discharge of cerebro-spinal fluid exceedingly great. I removed my drainage tubes, injected the cavity again and again with a weak solution of iodine, but to small purpose, the quantity of fluid discharge remaining about the same. I found my patient—despite the best nourishment I could give—becoming weaker from day to day; and in a week after the operation she was unable to stand. She became emaciated, and in two weeks I was fearful for her life.

The quantity of discharge will appear incredible to any one who has not had experience with it. A quarter of a pound of absorbent cotton placed over the head, would be thoroughly saturated in two hours.

I now had recourse to compression and attempted to seal up the wound, but with nearly the same experience, no very marked improvement in the amount of discharge taking place. This condition of things lasted about three weeks, and by the ordinary process of granulation the wound closed, and she rapidly regained her strength. I observed closely during the period of her convalescence the very marked anemia and the pronounced weakening of the mental faculties, produced by this loss of cerebro-spinal fluid. From being bright, cheerful and intellectual, she became petulant, sullen and almost incapable of any intellectual process whatever. She has not improved as much physically since that time as I had hoped. Her limbs, though better developed than they were when the operation was done, have not been completely restored by any means. The limbs are both small, and less under the control of the will than those of the opposite side. The resulting anemia was only slowly recovered from.

Last December I was called in consultation with a neighboring practitioner to see a boy, who in a fight with one of his companions had received a stab wound in the back of the neck. The physician who was called to attend him dressed it in the ordinary way, and expected it to heal as an ordinary incised wound would, (perhaps by some suppuration) but as the wound was small and thought to be not very deep no one looked for bad results. Ten days after the receipt of the wound I was called in. I found him lying in a bed, the upper half of which was saturated with the fluid that was continually flowing from the wound in the back of the neck. On examination I found the wound had been made with the point of an ordinary jack knife, thrust into the neck immediately under the occiput, and had evidently entered the cranial cavity in the suboccipital space. The fluid that was emerging from the wound was as clear and limpid as spring water. It was albuminous in consistency and slightly alkaline in reaction. It flowed rapidly; even when sitting up it would drop at least 80 to 100 times per minute. A probe passed into the wound evidently reached the medulla oblongata and produced great pain, with a tremulousness of the extremities, and as he expressed it "a queer sensation all over him." He stated that when he first received the wound it knocked him down, and for a minute or two he could not get up. He did not know that the boy had struck him with a knife, but thought he was stunned. He did not know he was cut until some one said, "there is blood running down your neck; the boy has cut you."

From being a strong muscular boy, and a general all around tough, he was in ten days unable to walk from the bed to a chair. His intellectual processes were dull and sluggish. He had no fever, his temperature being normal. His pulse rapid but very feeble.

After cleaning the wound and its surroundings thoroughly I proceeded with a long silk suture passed through the neck deeply on each side of the wound, to bring it together, and then dressed it in the ordinary antiseptic manner. The dressing was left in place for a week, and when it was removed the sutures were also removed. Healing was found to be complete, and no further trouble from that source was experienced.

It was three weeks, however, before he was able to be out of the house, although there was nothing wrong with his general health. The pronounced anemia due to the great loss of cerebro-spinal fluid had thoroughly debilitated him, and it was over a month before he was again seen on the streets.

These cases have served to convince me that a great loss of cerebro-spinal fluid has practically the same effect on the general health that great losses of blood have, the symptoms being almost identical and the recovery almost as slow. The statement will, I have no doubt appear extravagant in view of the fact that no red blood corpuscles are lost, and that the fluid is purely albuminous and should be speedily, very speedily reproduced. The symptoms during the time are precisely the same as those of loss of blood. The cranial bones form a close bony cavity that always hold just so much. If this cerebro-spinal fluid is drained off, there ought to be an engorgement of the brain with blood. Of this, however, I have never seen the slightest symptoms in any manner whatsoever, but all the symptoms of a profound anemia.

### EFFECTS OF ANEMIA OF THE BRAIN.

Of the effects of anemia of the brain, I wish to complete the report I made to this society at its last meeting at Purple Springs. I had ligated the common and internal carotids and internal jugular vein for gunshot wound in the side of neck, producing an aneurismal varix in the side of neck. (See last year's report of Missouri State Medical Association.)

Abraham Grayson, the subject of the report was, at the time of the meeting still a convalescent at the hospital. The progress of his case towards a complete restoration was much slower than I had anticipated at that time. He could carry on a conversation that required no, or very little, effort of memory. But even this very soon wearied him, and after a few minutes his answers were either entirely incorrect or the verbiage was incoherent. If, for instance, he was suddenly asked his name, he was unable to tell it. He, however, knew what his name was not. If other names were called he knew they were not his own, and would promptly answer "no," and when his own name was called he would as promptly answer "yes." This condition continued without much improvement, apparently, till the latter part of July, when I noticed a very decided improvement in his general condition. He regained flesh, walked with a perfectly steady gait, ate and slept well, and when spoken to responded promptly and intelligently to the question. The only thing that appeared to distress him was a continuous effort at memory. His pulsations would become rapid, his respiration increase in frequency, and in general he presented a picture of great mental excitement.

By the first of September he had so thoroughly convalesced as to be able to be discharged, and was discharged from the hospital, in every way so far as I could discover, perfectly restored to health. The mental hebetude, as well as amnesia, lasted much longer than any one would have supposed from the manner in which he progressed for the first three weeks after the operation.

From the sudden and profound anemia of the brain area involved in cutting off the circulation through the middle cerebral artery on the left side, there must have been sustained by the brain substances an amount of injury that no one had contemplated. Hence, I take it, the slowness of recovery.

### WOUNDS OF THE SINUSES.

Now that operations on the skull are so frequently being done, it is not at all wonderful that wounds of the sinuses will more and more frequently occur. The older members of the profession among us, will easily recall the instructions that were always given us, to avoid certain areas of the skull in trephining operations, so as not to wound the sinuses. The operation of trephining in those days was done with relative infrequence. The mortality following such operations was always high, and the surgeon hesitated long before making the attempt.

The course usually pursued was to wait until some profound manifestation of compression, inflammation or suppuration had set in, before active interference was undertaken, and then only to extend his explorations as far in as the membranes of the brain, and laterally as far as the skull was wounded. Such limitations, however, do not at all satisfy the modern expert surgical operator. He looks deeper to see what lies beneath the membranes and investigates the substances of the brain to determine how much injury it has sustained. He reaches out in his investigations quite beyond the margin of the broken bone, to determine if fragments have not been thrust underneath the margin of the unbroken bones; and to know for a certainty that he is entirely beyond the area of wounding. Not only this, but in almost every case of manifestation of cerebral brain irritation he is found obtruding into this sacred domain with his physical investigations. If he finds fluid within the ventricles producing compression of the substance of the brain, he aspirates it as he would fluids contained in the joint, or pleural cavities. Should he believe this due to some infection, he does not hesitate to inject it with some antiseptic fluid. It is not at all wonderful then, that in these extensive manipulations the sinuses of the brain should occasionally be wounded, either incidentally or accidentally.

I wish to report to this society three cases of wounding of the sinuses. One accidentally during an operation, and two the result of injuries sustained through the fragments of bone of the skull, when it was broken, being driven into it.

*Case 1.*—In doing craniectomy upon S. L. for chronic concentric hypertrophy of the skull, extending over a large area of its vertex, I found the bones exceedingly hard, almost ivory-like in consistency. The pressure I had to make on the trephine was very great and the progress I made in the operation very slow indeed. I noticed toward the end of my cutting that blood was flowing freely from the groove made by the trephine, and was at once made aware that I had either opened a large vein or the superior longitudinal sinus. As soon as the button was removed I found that the groove through the sinus was more than ordinarily deep, and that I had made a large transverse opening in the sinus through which the blood flowed very freely. I had pressure made over it, and proceeded with the operation until I had completed it. I thought now that it was a fresh wound, clean and healthy in every respect, that if I could suture the margins with fine catgut, bringing them closely together, I might be able to get healing by immediate union, especially as I intended to cover it up with the scalp flap. With a small needle and piece of fine catgut I succeeded very well in suturing the margins and bringing them into apposition, and thus entirely arresting the flow of blood. I had no farther trouble from this wound. The healing of the scalp was perfect, and I had no bad results whatever from the wounded sinus.

*Case 2.*—David Guyhrie. On operating at the city hospital on a case of chronic depressed fracture of the skull, extending across the superior longitudinal sinus, I found on removing a portion of the depressed bone that the wall of the sinus had either been so entangled in the broken fragments of the bone, or adhered by inflammatory process of the bone, that on attempting its removal a ragged wound was made in the sinus. Encouraged by my former experience, I proceeded at once, after having completed my operation, to close the wound in the sinus by catgut sutures. This I had little difficulty in doing, as the wound was but small and the sinus at this point not large. The scalp covering was adjusted in the ordinary way, and the wound healed without the slightest interruption. No bad symptoms followed, and my patient made a perfectly satisfactory recovery.

*Case 3.*—Case No. 3 was a young man, Mal Dortan, who had four months previous fallen quite a distance alighting on the back part of the vertex. He had sustained a rather long transverse fracture of the skull, with a very marked depression of bone. He had no epileptic seizure, but suffered continuously from headache, so as to entirely invalid him. A trephining operation being determined upon for the removal of the depressed bone, I proceeded to do it at the clinic, in the presence of the class of the University Medical College.

After the scalp had been carefully raised and the bone exposed, I remarked to the class witnessing the operation, that there was an extraordinary amount of blood flowing from the bottom of the fissure, and that either a large vein or the superior longitudinal sinus had been wounded. Upon the removal of the bone down to the bottom of the valley of the depression, the blood flowed much more freely, showing very plainly that it came from the sinus.

As soon as the last piece of bone was lifted a large opening was discovered in the sinus—an opening as large as a lead pencil. The blood flowed from the wound in a stream, very much as if it had been poured from a teapot. My former experience gave me no assurance that I would be able to close this wound.

The edges of this wound were undoubtedly healed over. It was simply a great irregular wound in the upper and back part of the superior longitudinal sinus, just before it divides to form the lateral sinuses. I determined, however, to make the attempt to close it, and hoped—perhaps without any very good grounds—that my efforts would be successful. I had a good deal of trouble in drawing the edges together; in fact I very much question whether the edges were brought together at all or not. I did succeed, however, in almost completely arresting the flow of blood, a simple oozing being all that was left. The area of bone removed was quite large and I was fearful of oozing under the flaps. I placed at two or three points capillary drainage. I adjusted the flap over the wounded sinus as well as possible, and hoped to get as good results as I had in the two former cases.

Circumstances over which I had no control prevented my dressing him at the next clinic, and he was dressed by the hospital dresser, who inadvertently pulled out the capillary drainage in removing the dressings, and thinking he had to replace it by something else, put in some rubber drainage tubes that were undoubtedly infected. When I next dressed the wound—one week from the day I operated—I found to my horror purulent fluid issuing from the drainage tubes. I dressed it with all the care I knew how, and cleansed it with all the antiseptic precautions. It was with fear and trembling that I visited the hospital each day for the next two weeks, thinking that each time I should find my patient comatose from the entrance of pus into the sinus. Nature, however, had done more for me than I had given her credit of being able of doing, in having so carefully and completely sealed up this vulnerable point.

Suppuration continued from one of the drainage tubes for almost three weeks, but no bad symptoms resulted from it. The wound in the sinus was safe, having been completely sealed up by the flap, the suppuration never extending to it.

I have been thus careful in reporting the results of these cases, with the purpose of encouraging surgeons in this line of treatment. Believing that the wall of the sinus if kept thoroughly aseptic, and closed without the lining of the membrane of the sinus being wounded by the surgeon, would heal just as a wound will in any other part. Particularly so if it is immediately closed over by clean, healthy tissue. In my judgment, it is preferable to the method so generally recommended of packing, and hoping that it may heal by a clot, the danger of which I think is very great.

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# RHINITIS IN CHILDREN; ITS VARIETIES, CAUSES AND TREATMENT.

Read before the Illinois State Medical Society, May 15, 1893.

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CHICAGO.

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The forms of rhinitis which affect children are, in the main, subject to the same classification as when affecting adults. Various phases of the disease, however, both in pathology and clinical history, assume in childhood different degrees of importance, by reason of special tissue proclivities which are incidental to early life, and of unusual damage liable to ensue in a child from neglect of the disease during the developmental period. The treatment also requires special adaptation to the comparative helplessness and timidiy of young children.

### ACUTE RHINITIS.

Acute rhinitis, colloquially termed "cold in the head," is an acute inflammation of the mucous membrane lining the nasal cavities from the anterior nares to the naso-pharnyx. It is prone to extend to adjoining mucous surfaces and usually embraces the naso-pharnyx, at least to some degree, and thence not infrequently also the middle ear.

*Etiology.*—Reasoning from analogy, one must regard acute suppurative rhinitis as an infection by pathogenic micro-organisms, but it is a result of "taking cold," which follows certain exposures with such regularity and precision that one must also infer a causal relationship to exist between chilling of the body and rhinitis. The congestion of the nasal vessels occasioned by "taking cold" evidently favors a microbic invasion of the mucous membrane by, in some manner, impairing its powers of resistance.

Instances are not wanting of direct infection of one person by the discharges of another, an accident which is apt to happen among children by the use of handkerchiefs in common. Suppurative rhinitis of infants is also attributable to direct infection from the vaginal discharges during birth, and to want of cleanliness after birth.

*Treatment.*—It is much too customary to permit this acute inflammatory disease of a delicate part of the body to progress without efforts to mitigate and abbreviate it. Such a course is fraught with immense possibilities of ultimate damage, chronic catarrh of the nose and accessory organs being thereby established. Many remedies are of real service, but a multiplicity of recommendations is confusing and tends to lessen confidence in any one line of treatment. I will therefore describe simply my own methods of dealing with these cases.

If it is sought to abort the attack of rhinitis, a single average-sized dose of Dover's powder, proportionate to the age of the child, is given at bedtime, also a laxative if needed. The patient is especially well covered in bed, outside night air is excluded and the temperature of the apartment maintained during the night at 60° to 64° F., but no effort is usually made to produce profuse prespiration.

Internally, the following formula will meet the indications:

℞. Tr. aconiti, m.xii.
Tr. belladonnæ, m.xxiv.
Morphinæ sulphatis, gr. ¼.
Potassii bromidi, ʒi.
Spts. menthæ piperitæ, m.xx.
Aquæ g. s. ad. f℥iii.
M. et. Sig.: Adult dose one teaspoonful every hour, to be lessened for children according to age.

The same ingredients could readily be prepared in the form of a capsule, pill, or compressed tablet.

Local treatment is of the utmost importance, and the following mixtures render satisfactory service by atomization;

Spray No. 1.

℞. Cocainæ hydrochloratis, gr. ii.
Sodii boratis, gr, xx.
Sodii bicarbonatis, gr. xx.
01. eucalypti, m. i.
01. gaultheriæ, m. i.
Thymol, gr. i.
Menthol, gr. ½.
Glycerinæ, f℥ ss.
Aquæ q. s. ad., f℥i.
M. et. Sig.: Dilute, adding one or two teaspoonsful to one ounce of warm water for use as a spray.

Spray No. 2.

℞. Cocainæ hydrochloratis, gr. ii.
01. pini canadensis, m. v.
01. gaulthereæ, m. ii,
01. eucalypti, m. ii.
Thymol, gr. ½.
Menthol, gr. i.
"Vaselin oil," f℥i.
M. et. Sig.: Use with double bulb (Davidson) atomizer, either alone or following the use of spray No. 1.

For young children who are often terrified by spraying, may be substituted a small syringe or an ordinary medicine-dropper used as a syringe, with which to project gently either of these solutions through the nostrils. Spraying or gentle syringing in this manner may be performed twice or three times daily or even every three hours in severe cases. The cocaine can be omitted from either spray formula if there is any objection to its use, without seriously impairing the effectiveness of the remedy. All solutions for nasal use should be somewhat warm.

Of the many inhalations, I will mention only camphorated steam as a domestic remedy of power. It is conveniently used by placing a pint of steaming hot water in a glass fruit jar and adding two fluid drachms of spirit of camphor. A funnel, preferably of glass, is then inverted to cover the mouth of the jar and the rising steam is inhaled through the nostrils as it escapes from the small end of the funnel. So used, especially during the evening for a half-hour, it conduces to a comfortable night's rest and facilitates recovery.

### SIMPLE CHRONIC RHINITIS, INCLUDING CHRONIC PURULENT RHINITIS OF CHILDREN.

Recurrent attacks of acute rhinitis establish in children and young people especially, a chronic inflammation of the mucous membrane which is characterized by variable degrees of proliferation of the epithelium, and by muco-purulent secretion which is often profuse. The disease is not accompanied by material enlargement of the turbinated *bodies or distension of the erectile tissues*, and stenosis is not a prominent symptom which differentiates it from hypertrophic rhinitis.

*Etiology.*—Bosworth plausibly contends that children are particularly prone to inflammation of the epithelial lining of mucous membranes, and that the epithelial proliferation of muco-lymphoid glands becoming organized without desquamation accounts for enlargement of the tonsils, etc., while an allied inflammation in the nose with rapid desquamation of the epithelium constitutes the most important element in purulent rhinitis. The disease bears no constant relationship to scrofula, tuberculosis or syphilis since it affects children who are otherwise robust quite as frequently as it does the subjects of these dyscrasiæ. Inattention to hygienic matters, leading to frequent attacks of acute rhinitis, and failure to treat the same effectively, are potential factors in the establishment of this form of catarrh.

*Symptomatology.*—A profuse muco-purulent discharge from both nostrils, swelling and redness of the external nasal appendage and excoriation with incrustation of the anterior nares are the chief manifestations, a too profuse discharge being the sole complaint in the milder cases.

In the course of years, if the purulent type of rhinitis be not arrested, the mucous glands, atrophy, the secretion grows less, but thicker, and tends to accumulate in crusts. In other words, the disease may pass gradually into the atrophic form of rhinitis which is the successor to purulent rhinitis perhaps more frequenlty than it succeeds hypertrophic rhinitis, although commonly credited to the latter disease.

Simple chronic rhinitis, however, does not always assume a purulent type, the chief symptom oftentimes being merely a too profuse mucous discharge. This form of the disease is prone to pass gradually into hypertrophic rhinitis; in fact, it is sometimes difficult to draw a distinct diagnostic line between either the purulent or non-purulent form of simple chronic rhinitis on the one hand, and hypertrophic rhinitis on the other. Indeed, in rarer instances these conditions are seemingly associated.

*Treatment.*—In the purulent type muco-pus must not be permitted to accumulate and decompose in *the sinuosities around the turbinated bodies, thus* perpetuating the disease. In not too inveterate cases thorough cleansing by means of an antiseptic, alkaline and mildly astringent spray, used three or four times daily, with a hand-ball atomizer, is all that is necessary to effect a cure. The following modification of Dobell's solution answers this purpose admirably:

℞. Sodii boratis, gr. xv.
Sodii bicarbonatis, gr. xv.
Ol. eucalypti, m i.
Ol. gaultheriæ, m i.
Thymol, gr. i.
Menthol, gr. ½.
Glycerni, f ʒss.
Aquæ, q. s. ad. f ℥i.
M. et. Sig.: To be diluted adding two teaspoonsfuls to one ounce of warm water for use as a spray.

If a more active astringent is necessary to check the hypersecretion, sulpho-carbolate of zinc, two to five grains to the ounce, may be used as a spray, following the cleansing solution.

In young children who are terrified by spraying, these solutions, well warmed, can be used by means of a small syringe. When the purulent type of the disease is complicated by the presence of hypertrophy of the turbinated bodies, deformity of the septum, adenoid vegetations, etc., any of which obstructions will impair the drainage, and cause a muco-purulent discharge, surgical treatment appropriate to this special cause or complication is usually indicated. However, the case would not then be regarded, strictly speaking, as one of *simple* chronic rhinitis.

### HYPERTROPHIC RHINITIS.

This is a chronic inflammation of the mucous and submucous tissues of the nose, characterized by enlargement, especially of the turbinated bodies, which encroach upon the normal lumen of the nostrils, and cause impairment of nasal respiration and drainage. The disease is thought to be rare with children, especially under ten or twelve years of age, but I am convinced that a mild form or early stage of the affection is very common at all ages.

In children and adolescents persistent enlargements of the turbinated bodies can and do present themselves, in consequence of mere dilatation and engorgement of the vessels of the submucosa, without any considerable degree of cell proliferation, but in addition to this "intumescent form," even somewhat advanced grades of hypertrophic rhinitis are certainly met with in children.

*Etiology.*—The most prolific source of hypertrophic rhinitis in young children is adenoid vegetations, which, by partial occlusion of the posterior choanæ, interfere with the proper drainage and evaporation of nasal secretion, the irritation of retained and decomposing secretions serving to excite proliferative changes in the nose.

Clinically these conditions are frequently conjoined and it is certain that they sustain some dependence upon each other, for removal of the "adenoids" is often followed by subsidence of the nasal hypertrophies. Recurrent acute rhinitis is another potent factor in the development of hypertrophic rhinitis.

*Symptomatology.*—Nasal stenosis or obstruction on one or both sides is the most prominent symptom. The secondary results of nasal stenosis, are a nervous restlessness, which is excited in many by the sense of obstruction and pressure in the nose, inability to sleep soundly at night, or intellectually to apply themselves persistently by day, together with headache and reflex pressure symptoms such as hemicrania, asthma and spasm of the glottis. The most frequent of the reflex nasal symptoms in childhood, are asthma in association with bronchitis and spasm of the glottis in association with laryngitis; in fact, so common in children is dependence, at least in part of chronic bronchitis, with asthmatic symptoms upon nasal stenosis and adenoid vegetations that the closest scrutiny and attention should be given to the upper respiratory tract in all such cases.

The term "reflex" is doubtless often misappropriated, yet it has a definite significance, and the pathological reflexes which originate in nasal or naso-pharyngeal irritation and terminate in cough, laryngeal spasm, or asthma, follow much the same pathway as the physiological reflex known as sneezing.

A very annoying symptom and one which may first attract attention is dysphonia; in fact, such children are constantly declared to be tongue-tied, and the lingual frænum cut without benefit, when the real defect in speech lies in occlusion of the nares or naso-pharynx.

*Treatment.*—When dependent upon adenoid vegetations, the surgical removal of these growths usually results in subsidence of the hypertrophic rhinitis. Resolution will be favored in such cases, however, as well as in the milder forms of the disease, not secondary to naso-pharyngeal adenoid hypertrophy, by the use, twice daily, of an antiseptic alkaline and mildly astringent spray, or lotion formulated as prescribed for "simple chronic rhinitis." This is especially important as a cleansing measure in cases in which some degree of hypertrophy is conjoined with the suppurative type of rhinitis. Refined petroleum products variously known as "albolene, lanoline, benzoinol," etc., are just now extensively employed in many combinations in all forms of rhinitis, but antiseptic alkaline aqueous solutions are certainly more effective when the parts are to be cleansed of muco-purulent accumulations. Petroleum sprays are, however, often soothing and protective to the parts, especially at times of acute and subacute exacerbations, and may be used in such cases following the aqueous spray twice daily, or used alone with patients who have no retained muco-purulent secretions. "Vaselin oil," being more viscid than the whiter products, and yet sufficiently fluid to be converted into spray by a good double bulb hand atomizer, is best adapted to this use, and may be prescribed in the following combination:

℞. Ol. pini canadenses, m. v.
Ol. gaultheriæ, m. ii.
Ol. eucalypti, m. ii.
Menthol, gr. i.
Thymol, gr. ½.
Vaseline *oil*, q. s. ad., ℥i.
M. et. Sig.: Use with a double bulb atomizer.

A more astringent spray is occasionally beneficial, although strong astringents are not well borne by the nasal mucous membrane:

℞. Zinci sulpho-carbolatis, gr. v.
Iodi, gr. i.
Potasii iodidi, gr. ii.
Menthol, gr. i.
Ol. gaultheriæ, m. iii.
Glycerini, fʒss.
Aquæ q. s. ad., f℥i.
M. et. Sig.: Use with atomizer.

NOTE.—Vaseline oil or albolene can be substituted for the glycerine and water of this formula.

Persistent use of these remedies together with the surgical removal of adenoid vegetations and enlarged faucial tonsils, and hygienic guards to prevent frequent "colds" will effect a recovery in the majority of cases of hypertrophic rhinitis of children. A minority, however, which includes especially the older children, will not yield to this treatment and will require reduction of the hypertrophy by means of the electro-cautery in order to overcome the nasal stenosis. One should not hesitate to adopt this method in suitable subjects for the results are very satisfactory.

### ATROPHIC RHINITIS.

Also termed cirrhotic rhinitis, dry catarrh, ozœna and fetid rhinitis, is characterized by atrophy and cirrhotic changes in the nasal mucous and submucous tissues, including the turbinated bones, which lead to increased spaciousness of the nostrils; also by atrophy with impairment of function of the mucous glands, by reason of which the muco-purulent secretion becomes inspissated and accumulates in the form of crusts, which in turn, undergo decomposition and occasion fetor.

*Etiology.*—The commonly accepted theory that *atrophic rhinitis is a sequel to hypertrophic rhinitis*, a late stage of that disease, is now receiving much adverse criticism. It is true that an *apparent* transition is occasionally observed, but that the previous hypertrophy was the real and essential cause of the subsequent atrophy is exceedingly doubtful. I have observed the two conditions to exist at the same time in the same individual—atrophy in one nostril and hypertrophy in the other, and even atrophy and hypertrophy in different parts of the same nostril; but the only cases in which I have observed distinct hypertrophy to pass definitely and completely into the atrophic condition were those affected with grave constitutional disease, notably tuberculosis and syphilis.

The average life histories of the two affections are dissimilar. At least one form of atrophic rhinitis is common in childhood and the disease rarely originates after thirty-five or forty years of age.

Hypertrophic rhinitis with permanently organized infiltration of a degree sufficiently advanced to pass as alleged, into the atrophic state, does not commonly occur, at least until maturity; hence, this theory fails to afford an adequate explanation of the many cases of atrophic rhinitis which occur in early life. Bosworth has advanced the most rational explanation of the etiology of atrophic rhinitis of early life in designating "suppurative rhinitis of children" as the real cause, a view which harmonizes with the life history of the disease, and which is of especial value from a prophylactic standpoint, since it teaches us the importance of promptly suppressing chronic suppurative rhinitis, viewed as a cause, the ultimate effect of which, atrophic rhinitis, is itself difficult of suppression.

Hereditary predisposition to atrophic rhinitis is often pronounced. For instance, a patient, æt. twenty-two, has developed the disease during the last two years; her mother, for some years deceased, suffered from the disease in a typical form; the patient's child, aged three years, is likewise affected.

*Symptomatology.*—Crust formation and fetor are the most prominent symptoms of the disease, although other secondary manifestations are numerous. The crusts may accumulate only in thin scales, or in large masses of horny consistency which may even occlude the nostrils at times, being firmly adherent and impacted in the sinuosities of the nares, until by decomposition and softening of the layer adjoining the mucosa they are finally cast loose and expelled in large pieces by blowing, often leaving abraded surfaces behind.

The fetor varies in intensity in different cases, but is rarely entirely absent, and in its severe form is so horribly nauseating and penetrating as to contaminate the atmosphere of an entire room in a few minutes, and to necessitate comparative isolation of the patient. The fetid odor is apparently due solely to decomposition of the incrusting secretion *in situ*, but there is reason to believe that this decomposition may extend to the secretion which is still in process of elaboration in the substance of the glands themselves.

In advanced cases, commonly, the sense or hearing is impaired, the patient's own smell obtunded, the external nose broadened, its alæ thickened, and the physiognomy lacking in acuteness of expression. The disease extends after a time to adjoining surfaces, constituting atrophic naso-pharyngitis and atrophic pharyngitis. The naso-pharynx becomes so incrusted that the fetid masses must be literally pried out with probes and forceps. More rarely, even the larynx and trachea become involved, crusts accumulating in these passages to the point of occasioning dyspnœa.

*Diagnosis.*—On rhinoscopic examination, both anteriorly and posteriorly, one is impressed by the spaciousness of the nasal cavities and the presence of scales or crusts. The disease is likely to be confounded, especially in childhood, with hereditary syphilis of the nares, which is also accompanied by fetor and incrustation. Unfortunately, by reason of the fetor the term "ozœna" has been applied to both diseases, consequently it is a bad name for either affection, especially since it refers only to the symptom—fetor.

In atrophic rhinitis, there is uniform atrophy and incrustation without deep, destructive ulceration.

In hereditary nasal syphilis the atrophic process, if present at all, is not uniformly distributed, the nostrils being contorted by deep ulceration with subsequent cicatrization of various parts.

*Prognosis.*—Atrophic rhinitis requires persistent thorough treatment over a period of from four months to two years, in order to effect recovery even in young subjects and in recent cases. Both patient and physician are prone to become discouraged and to abandon treatment, much to the disadvantage of the former. Inveterate cases must continue cleansing measures for years, as part of the toilet, with the same regularity that is given attention to the teeth. In the worst cases the difference between persistent treatment and total inattention, is the difference between the lot of an acceptable member of society and that of a social outcast.

*Treatment.*—The first essential to successful treatment is absolute and continuous cleanliness of the parts. The crusts must not be allowed to form, much less to undergo decomposition. One of the most efficient means to this end, especially for children, is the nasal douche. I believe it to be justifiable for the sake of efficient treatment of this particular disease to assume the slight risk of inflammation of the ear, possible by this instrument. This risk, with proper use of the instrument, is remote in comparison with the danger from atrophic rhinitis, ineffectually cleansed. The original instrument of Thudicum was of glass, but the ordinary soft rubber bag gravity douche fitted with a nasal nozzle, answers the purpose still better. It should be suspended from a nail over a convenient basin at such a moderate height that the bottom of the bag is only about three inches above the level of the nose, as the head is held over the basin. The patient must maintain breathing by the mouth well opened, when on applying the nozzle to one nostril the liquid will gravitate gently and slowly into one nasal passage and out through the other, the oral respiration sufficing to close the naso-pharynx by the velum palati. Not force, but thorough maceration, is requisite to detach the crusts, therefore one to two pints of fluid should be gently and slowly used, twice daily as a part of the morning and evening toilet. The liquid employed should be alkaline, to facilitate solution of the crusts, *antiseptic*, to counteract the fetor, and *stimulating*, to encourage regeneration of the atrophied glands. These qualities are provided in the following formula:

℞. Sodii bicarbonatis, ʒiii.
Sodii boratis, ʒiii.
Extracti pini canadensis fluidi, f℥i.
Glycerini, f℥iv.
Aquæ q. s. ad. f℥viii.

M. et Sig.: To be diluted according to tolerance, adding one ounce to the pint or quart of warm water for use with the nasal douche.

With older children who can be taught the necessary manipulation, Warner's post-nasal douche should be substituted for the anterior douche of Thudicum on account of greater safety relative to the ear. The same solution in the same proportion can be used with it. One must first draw up a part of the liquid through the instrument into the rubber ball, then insert the curved nozzle through the mouth, behind the velum palati into the naso-pharynx, and squeeze the ball, thus expelling its contents forward through the nasal passages. This procedure should be repeated until half a pint of liquid is thus used, morning and evening. Children who will not tolerate any of these means can have the nostrils syringed conveniently by an ordinary soft rubber tipped ear syringe.

Peroxide of hydrogen has the property, by rapid oxidation, of disintegrating muco-purulent matter, and sprayed into the nostrils it will thus assist materially in loosening the dessicated secretion. It should be used a few minutes preceding the employment of either form of douche, sprayed by a powerful double-bulb atomizer, and of a strength just insufficient to cause smarting. The patient should receive treatment preferably from one to three times weekly in the office, at which time any resisting crusts should be detached by a cotton probang, and more actively stimulating and antiseptic medicaments applied. For the excoriation and incrustation around the anterior nares and over the cartilaginous septum, which is often one of the most annoying features with children, the following ointment thoroughly used each night, being inserted into the nostrils as far as the finger will reach, gives the most satisfactory results:

℞. Hydrargyri oxidi flavi, gr. i
"Vaselin," ℥i.

M. et Sig.: For local application.

Sprays of "liquid vaselin" with which antiseptic and stimulating medicaments, such as thymol and menthol may be incorporated, are also serviceable at times, tending to retard crust formation. Cod liver oil and syrup of iodide of iron are seemingly the most useful internal remedies, although neither can be relied upon to the exclusion of local treatment.

## NECROLOGY.

### Thomas Antisell, M.D.

Appropriate action was taken by the Medical Society of the District of Columbia, and this sketch was ordered to be sent to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. SAMUEL S. ADAMS, M.D., *Recording Sec'y.*

Thomas Antisell, M.D., died in Washington, D. C., June 14, 1993. He was born in Dublin, Ireland, January 16, 1817. He was son of Christopher Antisell of Kings county, Ireland, a distinguished barrister and Queen's council; his ancestry going back to Sir Bertine Entwyssel, who accompanied Henry II to Ireland.

He was educated at Trinity College, Dublin, studied medicine at the Dublin School of Medicine, Peter street, and Irish Apothecaries' Hall. He was a pupil and afterwards assistant to Sir Robert Kane from 1839 to 1843. He graduated at Royal College of Surgeons, London, in November, 1839, and spent a semester with J. B. Pelouze in his laboratory. In 1844 he pursued his chemic studies in Paris and Berlin under the most celebrated chemists of the time, Pelouze, Biot, Dumas and Berzelius. He practiced medicine in Dublin from 1845 until 1848, and was lecturer on chemistry in "Original School of Medicine." He was extra-professor to Royal Dublin Society, 1845–1848. He was a member of the Royal College of Surgeons, England, member of the Royal Dublin Society and member of the Geological Society of Dublin. As one of the "Young Ireland Party" he was sentenced to exile and imprisonment, but a friend procuring for him a position as surgeon on an outgoing vessel, he sailed for the friendly shores of America. Landing at New York November 22, 1848, he began the practice of medicine in New York City, which he continued until 1854, when he accepted the invitation to become the geologist of the P. R. R. Survey on the thirty-second parallel, by Lieut. Parke, Topographical Engineer U. S. A. Made a geological reconnoisance of Southern California and Arizona Territory, published in the seventh volume of the United States Reports of Explorations and Surveys, 1856. In 1848 he was professor of chemistry in Berkshire Medical Institution, and in 1854 professor of chemistry at the medical college at Woodstock, Vt., and Pittsfield, Mass.

From 1856 to 1861 he was chemic examiner in the United States Patent office.

During the civil war, 1861 to 1865, he was brigade surgeon, Surgeon of U. S. Volunteers, medical director Twelfth Army Corps, surgeon in charge Harewood Hospital, Washington, D. C., surgeon in charge of sick and wounded officers in Washington, D. C., president of Board of Examiners for Surgeons and Assistant Surgeons of Volunteers, was "brevetted Lieut.-Colonel for faithful and meritorious services during the war." He was mustered out of service in October, 1865.

In 1865 he was offered the position of president of the College of Cairo, Egypt, which he declined. From 1866 to 1871 he was chief chemist to the U. S. Department of Agriculture, and in 1869–70 was professor of chemistry to Maryland Agricultural College. In 1871 he was invited by the

Japanese government to be technologist of a government commission to develop the resources of the northern islands of that empire, returning in 1876. In appreciation of his valuable services to Japan, he was decorated by the Emperor of Japan with the "Order of the Rising Sun of Meijii." While on the ocean *en route* for Japan an invitation came to become president of the College, Lancaster, Pa., which Dr. Antisell appreciated and would have liked to accept, but it came too late, he having already contracted with the Japanese government for five years.

In 1877 he was again appointed chemic examiner in the U. S. Patent Office, which position he held until July, 1890, when, his health failing, he was reduced to a first-class clerkship and finally removed, August 31, 1891, by Secetary Noble.

From 1856 to the present time (1893), excepting an interval of five years in Japan, he has lived in Washington, D. C., where he resided till his death. All his life he has been a medical teacher, his specialty being analytical and technical chemistry. He has long been a member of the Medical Association of the District of Columbia, and of the American Philosophical Society of Washington, D. C., a corresponding member of the Academy of Natural Sciences Philadelphia, and of the Geographical Society, New York, a Fellow of the American Association for the Advancement of Science, also an honorary member of the Medical Society of the District of Columbia.

The University of Georgetown, with the medical department of which he has been connected as professor for more than thirty years, in the capacities of professor of chemistry and toxicology, professor of military surgery, physiology and hygiene, and emeritus professor of chemistry and toxicology, conferred upon him the degree of Doctor of Philosophy.

Dr. Antisell has been interested in and intimately connected with sanitary matters in the District, and has written many papers on kindred subjects.

The sanitary investigation of the National Hotel and the ventilation of the Capitol were public interests that were benefited by his scientific knowledge. He was one of the original founders of the Training School for Nurses, and the first president of that school.

His contributions to medical and scientific literature have been numerous, of which the following are a few: Papers on "Soils of Ireland," Royal Dublin Society, 1840; "On Sanitary Improvement of the City of Dublin," a "Manual of Elementary Geology," Dublin, 1846; "Outlines of Irish Geology," Dublin, 1847; a "Manual of Agricultural Chemistry," Dublin, 1847; "Treatises on the Tea and Coffee Plants," Dublin, 1847; addresses on the "Philosophy of Manufactures," delivered at Castle Garden during the Twenty-second Annual Fair of American Institutes, October, 1849; "Relations of Physical Geography to Agriculture," 1850, in Transactions of American Agricultural Association; "Home Cyclopedia of Arts and Manufactures,' Putnam, New York, 1852; "Applications of Chemical Science to Agriculture," 1859; "Photogenic and Hydro-carbon Oils," Appleton, New York, 1859; "Geological Reconnoisance of Southern California and Arizona," in U. S. Explorations and Surveys, Vol. vii, Washington, D. C. 1856.

Paper on "Constitution and Source of Bile," in the *American Journal of Medical Sciences*, Philadelphia, January 7, 1864; "Report on the Sanitary Condition of Washington," published in the Transactions of the Medical Society of the District of Columbia for 1864.

A paper on the "Epizootic of Horned Cattle," published in the Transactions of the American Agricultural Association for 1861; a Report made by the Committee on Medical Education to the American Medical Association at its meeting in 1865; "Cultivation of Cinchona," Appleton, 1867; "On the Value of the Sewerage of the City of Washington," included in Report of U. S. Agricultural Department, 1869; Introductory and Valedictory Addresses in Medical Colleges at Washington, six in number, from 1854 to 1871; "The Currents of the Pacific Ocean," 1876.

Dr. Antisell was married twice: to Eliza Anne Nowlan, of Dublin, in 1841, and to Marion Stuart Forsyth, of Detroit, Mich., in 1854.

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Dr. James J. Levick, widely known in medical circles died June 25, at his residence, 1200 Arch street, of heart trouble.

Dr. Levick was born in Philadelphia, and at the age of 22 years, in 1847, graduated from the Medical Department of the University of Pennsylvania.

After two years' service as resident physician at the Pennsylvania Hospital, at which he was, later, on the visiting staff, Dr. Levick was appointed to the staff of Will's Eye Hospital, which position he held until recently.

Dr. Levick was also connected with the Magdalene Asylum. He received in 1884 the degree of A. M. from Haverford College, and was a prominent member of the Academy of Natural Sciences.

He was also a member of the County Medical Society, the American Medical Association, the Historical Society and the American Climatological Association. He was quite prominent in the Society of Friends.

Dr. Levick was a prolific writer on medical subjects, and has printed various papers. Among the most important are those on heart disease and spotted fever. A paper on the early Swedish settler, read before the Historical Society, caused much favorable comment.

Dr. John C. Hall, Frankford, Pa., died June 8th. Dr. Hall was superintendent of the Friends Asylum for the Insane at Frankford, Pa.

Dr. C. Bernard Gale, Newport, Ohio, died June, 1893. Joined the Association at Detroit in 1892.

Dr. Silas T. Trowbridge, late of Decatur, surgeon of the Eighth Illinois Regiment and United States Consul at Vera Cruz, Mexico, for twelve years, died at Napa, Cal., aged 68 years.

Dr. William Carson, one of the most distinguished physicians of Philadelphia, died at 11 o'clock July 9.

Dr. Charles S. Frink, the oldest practicing physician in Elkhart, Ind., died suddenly in his office July 9. During the late war he was a member of Gen. Rosecrans' staff.

Dr. Fred Delamater Martin, a prominent young specialist of Norwalk, O., died July 7, aged 37. He was a student of Sir Morell Mackenzie in London for a season. He was an unusually talented and successful practitioner and surgeon.

The deaths of the following distinguished members of the medical profession abroad have been announced:—Dr. Peter, Professor of Clinical Medicine in the Paris Faculty of Medicine; Dr. J. Wojtaszek, *privat-docent* in Pharmacognesis and City Sanitary Officer in Cracow, of typhus fever contracted during the discharge of his duties.—Dr. Modrzejewski of Warsaw, who has written on deaf-mutism and a number of other special subjects of various kinds.—Dr. Frederick A. Salzer, Professor of Surgery in the University of Utrecht.—Dr. Delasiauve, formerly physician to the Salpêtrière, Paris.

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**Newspaper Joke.**—The following intensely humorous item is going the rounds of the lay press.

Manotrichloracetyledimethylphenylpyrazalon is the chemical name for hypnol.

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SATURDAY, JULY 15, 1893.

## THE NEW ILLINOIS BILL FOR THE COMMITMENT OF THE INSANE.

All who are well informed in such matters will agree that the recent statutes of Illinois governing the commitment of the insane have been inadequate and in some particulars almost barbarous. It is true that this State once had a statute that was fairly humane in its operation, but this was repealed when the law of 1874 was enacted, at the instance of a female paranoiac who alleged that she had been wrongfully detained at the State hospital in Jacksonville. About the only thing arrived at in that law was that every person should be brought into the county court and in the presence of a judge tried by a jury. All other matters were left in lamentable confusion, everything was sacrificed to that fetich, trial by jury for the insane, to the end that it should be impossible for a sane person to be sent to an asylum. As soon, as there, he was forgotten by the law and no record even was kept by the court of the final disposition of the case. If discharged recovered by the hospital there was no way of establishing judicially the fact that the person was restored to reason unless they fortunately had property and a conservator had been appointed by the probate court, in that case the application to have the property restored and the conservator discharged would again establish legally the fact of sanity.

For several years the Illinois State Medical Society has endeavored to have these defects remedied, resolutions have been passed, and the legislature urged to take up the question of lunacy laws, but until the last session, when a committee was appointed and several hundred dollars appropriated to pay their expenses at Springfield, practically nothing had been accomplished. Especial credit is due to Drs. A. B. STRONG and D. W. GRAHAM, for the admirable manner in which they conducted the campaign.

It was felt by every one having the interests of the insane at heart, that the clause of the old law requiring a trial by jury might safely be left to the discretion of the court, and in cases where persons were so demented that they did not have sufficient mental capacity to ask for a jury trial, or where they appreciated their unfortunate condition and did not want it, they might safely be committed by certificate of two qualified physicians. This latter clause has always been the stumbling block in the way of the average legislator when lunacy laws were under consideration. In this case an effort was made to destroy the usefulness of this bill by striking out from one of the sections the provision relating to trial by commision. Curiously the section stricken out is the one that safe-guards the commission and distinctly reserves the right of jury trial in case it is demanded. The provision for the appointment of the commission is amply provided for in other sections, not touched by the amendment.

In brief the provisions of the new bill are as follow: A definition of the word insane within the meaning of the act; a provision that no one shall be restrained of his liberty unless they shall have been adjudged insane. Directions for filing petition in county court and providing that where no physician has seen the alleged lunatic that the judge may appoint one to do so at a cost not to exceed five dollars. The filing of the above petition is sufficient to bring the lunatic before the court, unless the affidavit of some credible person is shown stating that the presence of the person in court would be manifestly improper. When no jury is demanded and the circumstances of the case are such that there appears to the judge no necessity for the impaneling of a jury, then the judge shall appoint a commission of two qualified physicians who shall have power to administer oaths and take sworn testimony, and to report to the court in writing their conclusions and recommendations, verified by affidavit. In all cases of trial by jury the jury shall consist of six persons, one of whom must be a qualified physician, and such trial must be in open court, in chambers, or at the home of the person alleged to be insane, at the discretion of the court. A provision is made for answers to interrogatories furnished by the State board of charities. Appeals may be taken to the circuit court from any judgment had under this act. The county court may also appoint a conservator, and sole jurisdiction over the persons of insane persons not charged with crime, is vested in the county court. Every patient confined in an asylum shall have reasonable opportunities for communicating with friends, providing his letters contain nothing of an immoral or personally offensive character. All letters to the trustees, State board of charities, and State or county officials, shall be forwarded unopened. No patient shall be placed in restraint or seclusion except by order of the physician, and a record shall be kept of all such orders for public inspection. Authority to discharge patients is vested in the trustees of the State institutions and may be delegated to the superintendent. No patient shall be discharged without suitable clothing and sufficient money to defray his expenses home. Every person confined as insane shall be entitled to the writ of habeas corpus, and if the judge shall decide that the person is insane such decision shall be no bar to the issuing of the writ the second time. Whenever notice shall be given to any county court, signed by the superintendent, that a patient committed by the court has been discharged cured, the judge shall enter an order restoring the patient in question to all rights as a citizen, and if a conservator has been appointed he shall be removed. Any person who shall conspire to commit any person unlawfully or who shall detain any person contrary to the provisions of this act, or who shall maltreat any insane person, shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not exceeding one thousand dollars or imprisoned for one year or both. The State commissioners of public charities are intrusted with the enforcement of all laws relating to the insane, the licensing of private houses, regulation of the forms relating to commitment, transfer and custody of the insane, and the visitation of places of detention. In case they institute prosecutions under the act, the attorney general and the State's attorneys in the several counties shall render them all needed assistance. They are also empowered to appoint boards of auxiliary visitors in each county, who shall visit almshouses, jails and houses other than licensed institutions in which the insane may be confined. By written application to the superintendent a person may commit himself to the hospital, but such voluntary patients shall have the right to leave the hospital at any time on giving three days' notice to the superintendent.

The above are the main provisions in what seems to be a most excellent measure, for the protection of the rights of insane persons. Indeed, it is about the first legal recognition that the insane have any rights. It removes the stigma that courts by their forms have attached to insanity, which makes it very like crime for which a person is arrested, charged, tried, and found guilty the same as for a felony.

## MEDITERRANEAN FEVER.

There is a fever occurring along the coast and in the islands of the Mediterranean sea that is known as Mediterranean fever, Rock or Gibraltar fever, Neapolitan fever, the country fever of Constantinople, the new fever of Crete, Malta fever, adeno-typhoid fever, intermittent typhoid fever, atypical typhoid fever, sudoral fever, etc., that has been considered by some clinicians as typhoid fever, by others as a typho malarial fever, and by still others as a pernicious malarial fever. Surgeon David Bruce published a paper in the *Practitioner* for September, 1887, in which he stated that the characteristics of the Malta fever are its long duration, the average stay in the hospital being 85.5 days, the continuous high temperature that may be remittent or intermittent in type, the enlarged spleen, the profuse sweating and sudomina, the constipation, the tendency to the development of some bronchitic affection, and the tendency to relapse often accompanied by rheumatic pains, arthritis or orchitis. As a rule the mortality is small. Postmortem examination of these patients showed enlargement and congestion of the spleen and other internal organs, but no appearance of any glandular enlargement or lesion in the intestines.

Mr. Bruce also stated that he had succeeded in obtaining from the spleens of several patients a micrococcus that grew in agar-agar nutrient jelly. He published in the same journal for April, 1888, a second paper in which he reported other cases of Mediterranean fever in which he found this micrococcus, and he also stated that inoculations of a culture of this organism into a monkey produced a fatal disease resembling the fever, while guinea-pigs, rabbits and mice were not susceptible to such inoculations.

Surgeon A. G. P. Gipps, R.N., published a paper in the Transactions of the Epidemiological Society of London (Vol. IX, 1891), in which he stated that he had found this microörganism in the spleens of two men that had died of this fever. This author considers the fever endemic in Malta, stating that in cruising elsewhere in the Mediterranean he had not seen a similar type.

Surgeon Louis Hughes, A.M.D., published a paper in the *Lancet* for December 3, 1892, in which he stated that he obtained a special microörganism resembling that described by Surgeon Bruce, from the spleens of five men that died of this fever. In two cases he succeeded in demonstrating its presence in fresh splenic substance, and he successfully inoculated two monkeys with the micrococcus. He made the important statement that he met with no other microörganism in these patients. He concludes from statistics and records of the last seventy years, from the distribution, and more especially from a comparison of the dates of admission of cases of this fever with the amount of rainfall, that its presence in Malta and Gibraltar is connected with human excrement. That the poison of this fever when infecting the human body is aerial in nature and arises from fæcal and organic matter, in porous soils, when these are undergoing a process of drying.

SURGEON BRUCE has published another paper in the *Annales de l'Institut Pasteur* for April, 1893, in which he calls the microörganism the *micrococcus militensis.* It is a round or slightly oval coccus, three $\mu$ in diameter, that grows slowly; seven days at a temperature of 25° C., or three days and a half at a temperature of 37° C., being necessary for the colonies to become visible to the eye, on a one and one-half per cent. peptone agar jelly. The colonies first appear as minute, transparent, colorless drops on the surface, subsequently becoming a transparent amber color, increasing slowly in size and eventually becoming opaque; by reflected light the colonies are milk white. Plate cultures could not be made on account of the very slow growth of the coccus at the temperature at which the gelatine plate remains solid. There was no growth on potatoes. As this microörganism when inoculated in monkeys has produced a disease resembling Malta fever, the author considers that he has discovered the specific organism of Mediterranean fever; but on account of the difficulty of cultivating the organism he is not prepared to state in what way it obtains access to the human organism.

While the course of this fever is not influenced by the administration of quinine, and the authors above quoted claim that paludal poisoning does not exist in Malta, it would have been well to state that examinations failed to show the presence of the *hæmatozoa malariæ.* They definitely state that EBERTH's bacillus was not present.

SURGEON A. PERRY took exception to SURGEON BRUCE's statement regarding the identity of Malta fever with the rock fever of Gibraltar. He stated in the *British Medical Journal* for June 8, 1889, that while the symptoms of Malta fever corresponded with those of Gibraltar fever, yet in almost one hundred necropsies he never failed to find in each case the typical lesions of the ileum characteristic of typhoid fever.

It would seem impossible that three observers should make the same error in their investigations, and SURGEON BRUCE's demonstration of a specific microorganism for Malta fever, shows that Mediterranean fever may be a comprehensive term that includes several distinct fevers.

## COMPENSATION OF PHYSICIANS SUMMONED BY STATE OFFICERS.

It is an important question for physicians liable to be summoned as experts by State officers to know what rights they have with regard to fees, and especially whether the action of a particular officer or board in fixing their compensation, when so provided for by law, is final and conclusive, or not. Under a former Iowa statute, providing that the coroner might, when he deemed it advisable, summon one or more physicians at an inquest, and that he should fix the compensation for such services, it was held (in Cushman vs. Washington Co., 45 Iowa, 256) that the coroner, or the justice acting in his absence, was the officer or tribunal exclusively charged with the duty of fixing the compensation in question. For refusal to act on the claim made, he might be compelled to do so by mandamus. For allowing an insufficient compensation, as no appeal was allowed, it was not clear what, if any, remedy was provided. The petition in that case showed that the justice refused to allow a claim for $50, but did allow $5 for witness fees and mileage for attending the investigation. This allowance was in excess of ordinary witness fees, and having been made, and the same being in the nature of an adjudication still in force, the physician could not maintain an original action against the county for his compensation. In Sanford vs. Lee Co., 49 Iowa, 148, the coroner had certified the amount charged as reasonable, and recommended the same to be allowed. The board of supervisors allowed only a portion of the amount; but the supreme court held that the recommendation of the coroner amounted to an allowance or approval of the amount charged; that it became a liquidated demand, and the physician was not bound to present it to the board before bringing an action; and that the county was bound, in the absence of fraud, to pay the amount allowed by the coroner. These cases clearly hold that under such a law as the foregoing, the coroner, or justice acting as such, could alone determine what was a reasonable compensation, and that such determination was, in the absence of fraud, conclusive. Under the amended statute of Iowa, which vests that same power in the county board of supervisors, their action must, for the same reasons, be held to be conclusive in the absence of fraud, was the decision of the supreme court in Moser vs. Boone County, just rendered. The force of the former decisions was conceded by Moser's counsel, but it was argued that the board might, through ignorance of the reasonable value of the services, or arbitrarily, refuse to allow a reasonable amount, and, no appeal being allowed, he was entitled to his action in court to determine what was a reasonable amount. The court, however, said that it might not be presumed that the board would act arbitrarily, or without due inquiry. In this, as in many other instances, the law does not fix the amount of compensation, because what would be reasonable in one case might not be in others. When it can not be foreknown what will be a reasonable compensation, the law vests some person, board or tribunal with power to determine that matter. The Iowa statute contains many such provisions, of which was mentioned one authorizing the court to fix the compensation of witnesses called as experts. It would hardly be contended that he could maintain an action to recover more than the court allowed him, though he was not permitted to have a jury to determine the amount, and the court should ignorantly or arbitrarily allow an inefficient compensation. Such a claim is like any other item of costs incident to legal proceedings, and when the amount is fixed by statute, or by the person, board or tribunal authorized to fix it, it is conclusive.

### THE CROOK OF THE CYCLE.

The wide diffusion of the bicycle as a means of locomotion, and as well an agent of pleasant pastime, has introduced into orthopedic surgery a new factor in the production of spinal curvature. When the wheel came into use, the handles were long and the rider sat upright. The followers of FATHER JAHN encouraged it, and well informed physicians saw in it a new instrument of physical culture.

The desire for increased speed and record breaking lessened the diameter of the wheel and shortened the handles, so that now you may see on any fine day whole troops of cyclists spinning along with their backs arched over the lever, and as the victim must see where he is going, he raises his chin, and the back of the head approaches the shoulder blades. Thus a double antero-posterior curvature has its foundation laid; constant humping the back could do no less.

It is not intended to convey the idea that cycling should be abolished; on the contrary, it should be encouraged, but cycles should be so constructed that the rider may sit upright like a man, and not double up like a hunchback or professional contortionist. In the latest patterns of bicycles we see wherein true scientific physical culture has been made to give way to the demands of the professionals. The amateur should be encouraged, for he rides for health and pleasure; while the professional rides for the money he can win by it. It was professionalism that ruined the Greek gymnasia, and professionalism has now converted a healthful and innocent amusement into a dangerous diversion.

## DOMESTIC CORRESPONDENCE.

### Medical Colleges and their Graduates.

*To the Editor:*—In your issue of July 1, J. J. Mulheron, M. D., in an article favoring the divorce of the medical licensing from the teaching power, gives copious extracts "from papers submitted by students who were graduated from a so-called medical college in good standing in the Association of American Medical Colleges, and whose announcement would lead you to believe that it is devoted to the cause of the higher medical education." It is painfully humiliating to know that any one is legally permitted to practice medicine who is the subject of such an appalling degree of ignorance as these quotations disclose. It should bring blushes to the lowest member of a class in an institution for the feeble minded. The illustrations are conclusive against the propriety of admitting to practice any physician on a college diploma alone, without the added safeguard to the public of a re-examination by a competent board whose sole duty shall be to examine candidates for practice and confer license for the same, but not to teach. I think, however, that Dr. Mulheron deals unjustly with the Association of American Medical Colleges in not disclosing to the public the name of the college alluded to. This would enable medical students to know what schools to avoid and would enable the College Association to take appropriate action. We have medical schools enough to educate as many physicians as are needed to fill the requirements of society, that are honestly conducted and doing worthy work. These are trying to improve their methods and enlarge their means of imparting instruction. By so doing they are increasing the power for good of the profession and consequently elevating its rank. The good name of these should not be smirched, and their character and influence impaired by the acts of others whose conduct only merits professional condemnation.

EPHRAIM INGALS, M.D.

34 Throop St., Chicago.

### A Candidate's Answer to the Minnesota Board of Examiners.

*Question.*—What conditions must be proved to have existed in order to prove the illigitimacy of a *child* born in wedlock?

*Answer.*—She must have been married nine months prior to birth of child. If born at the sixth or seventh month and live, and the likeness as to father or mother of said child. Another proof is that the husband is not capable of reproduction, *or the mother is not capable of reproduction.*

### Waterborne Cholera.

New York, July 3, 1893.

*To the Editor:*—The interested perusal of Dr. Ernest Hart's admirable paper which covers so much ground, prompts me to add a few words from Japan.

The Hon. S. K. Takahash, late Consul General of Japan for the United States in 1886 said: "When we have cholera in Tokio, and our people die by the thousands, I notice that none in the Chinese quarter have cholera and that the Chinese *all drink boiled water,* to which this immunity is attributed." This strong, terse, positive and direct testimony it seems to me goes to sustain the positions of the distinguished gentlemen who has favored us so kindly with his extensive and timely observation.

Respectfully yours, EPHRAIM CUTTER.

### As Others See Us.

The following correspondence which appears in the *British Medieal Journal* for July 1, gives Mr. Hart's views on our Association.

### MEDICAL NOTES FROM AMERICA.

BY ERNEST HART.

(From the British Medical Journal.)

*The American Medical. Association.—The Annual Meeting at Milwaukee.—The Constitution of the American Medical Association.—Suggestions for its Amendment—The City of Milwaukee.—Address on Epidemic Cholera.—The British Medical Journal.—The American Medical Editors' Association.—The British and the American Medical Association.*

The Milwaukee meeting of the American Medical Association was a very interesting, well-ordered, and lively meeting; the attendance was over a thousand, and from every part of the States. New York, which is heretical on the question of consultations with homœopaths, still holds aloof, but the Association is strong enough in the support of the most active-minded professional men in the States to dispense easily with the adhesion of any particular section. In their strong upholding of the *Code of Medical Ethics* as the test of membership, the Association has taken up a firm and unassailable position. Since it has acted on the advice which I tendered some ten or twelve years ago, when consulted by Drs. Sayre, Post, Pack, and others on the subject of the best means of promoting the growth of the Association, the membership has more than doubled, and it is now five thousand. The weak point which I laid my finger on was the evanescent character of the membership, which then depended upon annual delegation from the respective State Societies, which are the constituent bodies, corresponding in that respect, but differing in others, from our Branches. There are still, however, some other defects of organization, which I think could easily be remedied, but which hinder the growth of the American Medical Association. On some of these I have been in consultation with members of the executive, and have been asked to renew them in writing; they were meantime received with approval. The system of election of the governing body is capricious, and does not provide for stable and complete representation, but leaves room for much canvassing and wire-pulling, and by its elaborate incoherence raises opportunities for side issues and local contests quite irrelevent to the true objects of the Association. Some of the principles which at present govern the selection of matter for the JOURNAL and the conduct of its editorial department are incompatible with the high scientific, professional, and literary attractions which it ought and might easily be made to present. All this might be altered without additional expense for the moment, and the JOURNAL be made to serve the best interests of the Association and the profession, and to add largely to its resources, which could then be available for making its pages yet more attractive, so that it should—like the *British Medical Journal*—be the chief recruiting agent for the Association. This position, it is acknowledged on all hands, it does not at present occupy, faithfully and ably as it has been edited by Dr. Culbertson and his distinguished predecessors, among whom Dr. N. S. Davis, the founder of the Association, holds an honored place.

My suggestions bear chiefly on the transference of the power of election of the governing body from the "fortuitous concurrence of atoms"—as it has been described in our columns by a correspondent—called a "general meeting" to the county societies, who are the constituent bodies and who should therefore be the elective power. From these representatives, should be constituted the subcommittees for detailed work, who should act under and be governed by its authority. There are at present more than one separate controlling committee of "trustees," of "judicial action," of "nomination," etc., who act independently of each other, and are constituted hurriedly and by caucus influence at the general meeting—a system which might well injure any society, and which has more than once provoked deplorable and painfully michievous schisms. It speaks highly for the inherent and unquenchable vitality of the principle of the Association—"broad based upon the people's will"—and of the vigorous love of the profession and the Association which actuates the most respected member, that the Association has ridden successfully through all such storms. It survives and develops, but with maimed vitality throughout the year, and without that powerful influence on public affairs and professional progress which it might derive from better constituted committees of government, and of public and parliamentary administration, and from a more attractive and effective voice and tongue in its JOURNAL. In saying this I speak of new things, and with none but the most appreciative and respectful spirit. The meeting was large and much of the work was first-rate.

Milwaukee is a city of lawns, gardens, and lake, beautifully situated on a bay of Lake Michigan, and with abundant open spaces, well-preserved for civic ornament and health. Within the memory of the present generation it was the haunt of the Red Indian; it has now a quarter of a million of inhabitants, with fine hotels—Pfister's Hotel, which was the headquarters of the Association, is one of the best in the world—public buildings and business palaces, electric lighting throughout the town, and electric tramways. It is the headquarters of lager beer brewers, and the wealthy citizens aided the profession to make the meeting one of generous and continuous hospitality.

In accordance with the invitation of the Association received in Europe, I delivered an address on the Prevention and Proximate Extinction of Epidemic Cholera in Europe—mainly by the purification of the water supply and strict procedure to ensure the purity of drinking water. The address, which was based upon an analysis of all European epidemics of the last thirty years, was received, as will be seen from the published reports, with great favor. It was ordered to be printed and sent, with the endorsement of the Association as to the importance of its suggestions, to the Executives of all the States, and to the State Boards of Health. That is a compliment which I value even more highly than the kindly enthusiasm and applause which greeted its delivery. At the close of the meeting I was presented by the reception committee with a gold badge enameled with the initials of the American Medical Association and the year of meeting—a souvenir to which I shall attach a permanent value, and which will recall many pleasant incidents of the meeting, some of them too personally complimentary to relate.

It was particularly gratifying to find the *Journal* held in such high esteem and so extensively read. It was constantly, and indeed without exception, referred to as the chief medical journal of the world, and its usefulness to the practitioner as a helper in his scientific knowledge and daily work was referred to by one medical editor after another at the medical editors' banquet, and by scores of medical colleagues who introduced themselves, or were introduced to me, for the purpose of thanking the British Medical Association for its *Journal*. If our laws admitted of it, we could have some thousands more of members or associates among our English speaking brethren on the American continent, while limiting ourselves to members of State medical societies legally constituted and of good ethical standing.

The banquet of the Medical Editors' Association was a most lively and original affair. In so vast a continent, where capitals are often situated a thousand or two or three thousand miles distant, and with a population of more than sixty millions, it is natural that the astonishing literary activity of the nation should find a corresponding representation in the abundance of journals of all kinds. But I was hardly prepared to be the guest of 100 medical editorial colleagues—all of regular standing—with 300 more in reserve. I addressed them on Medical Journalism, in words of which I send a report—disfigured, however, by a great number of misprints and errors due to my "English brogue" and intonation worrying the reporters. I have only had time and patience to correct some of them, others I must leave to the indulgence of any readers of whatever text or part of the text may be published. It will be gathered from reports in the various medical papers what was the impression produced. It was applauded enthusiastically, and I was assured in all the complimentary speeches that followed, and by innumerable eulogists during the subsequent days, that it will not be without permanent usefulness. Of course I had nothing new to say, but even the scattered and desultory thoughts of however humble an orator gather some force from a lifetime of experience and from the disinterested desire of a stranger to be useful in the utterance of its lessons to himself.

Altogether, then, my visit to the Milwaukee meeting has, I hope, been useful as it has certainly been most pleasant, renewing and strengthening the bonds of mutual good will and esteem between the American and British Medical Associations, and promising to promote good understanding and fellowship with our English speaking brethren in the United States. To me personally it has been a week of hard but happy work, and of much social satisfaction. I am loaded with friendly and pressing invitations to other cities, among them Boston, Philadelphia, Detroit, Cincinnati, Danbury, St. Louis, Louisville, etc., and could easily spend here an active and happy six months in hospitable hands; but, as I must be home early in July to continue editorial and Parliamentary work—meantime in such excellent and able hands—I shall be unable to fulfil on this occasion more than a tithe of these proposed hospitable engagements, but shall hope to return later on.

## ASSOCIATION NEWS.

**The meeting** of the AMERICAN MEDICAL ASSOCIATION here next year will be the second visit of the Society to this coast. The first meeting was in 1870, and was a sad failure. It found the medical fraternity of California cut up into small cliques—that curse of our profession. Then California was thoroughly provincial; the connection with the east by rail had just been established. The medical men were from all parts of the world. The California medical societies had as yet made very little progress in uniting them socially; every fellow was for himself, or at least every little clique was for itself. We hope and believe that the ASSOCIATION will receive a most hearty welcome at the hands of a united profession, not only of San Francisco, but of the whole coast. We must assume the virtue of unity, if we have it not. The ASSOCIATION is accustomed to be handsomely entertained by the profession and citizens, and if they do not receive a California welcome from our citizens the fault will be with the medical profession, as it was before. Let us, one and all, resolve to make the meeting of the AMERICAN MEDICAL ASSOCIATION here next year worthy of California and the grandest event in the history of that Society. The selection of Dr. R. H. Plummer for chairman of the committee of arrangements is a fortunate one. It requires just such experience, untiring energy and perseverance as our friend Dr. Plummer possesses, to make a grand success of such an occasion.—*Pacific Medical Journal.*

**The London Lancet** of July 1, contains an extended notice of the Milwaukee meeting and thus concludes:

We wish all success to the Association. It has difficulties to meet in the vast area of its territory and in the consequent varied conditions of life and practice. But it should be supported by the profession, and, as the Mayor of Milwaukee suggested, should be welcomed by all communities as representing a calling indispensable to civilization.

## SOCIETY NEWS.

**American Dental Association.**—The thirty-third annual session of the American Dental Association will be held in Chicago, commencing Saturday, August 12, 1893, at 10 o'clock, A. M. GEO. H. CUSHING, *Rec. Secretary.*

**The Association of Military Surgeons of the National Guard** of the United States will hold its annual meeting at Chicago, August 8, 9 and 10, 1893, under the presidency of Dr. N. Senn.

**American Electro-Therapeutic Association.**—The third annual meeting of the American Electro-Therapeutic Association will be held in Chicago, September 12, 13 and 14, at Appollo Hall, Central Music Hall block.

Members of the medical profession interested in electro-therapeutics are cordially invited to attend.

AUGUSTIN H. GOELET, M.D., *Presideat.*

MARGARET A. CLEAVES, M.D., *Secretary.*

**National Association of Dental Faculties.**—The annual meeting will be held in the house of the Columbian Dental Club, Chicago, No. 300 Michigan Avenue, beginning on Thursday, August 10, at ten o'clock A. M., and continue probably through that and the succeeding day. It is important that all matters of business to come before that meeting be properly prepared beforehand, so that business can go promptly forward. It is to be hoped that all persons interested will give special attention to this request, and that every member be promptly present at the beginning of the meeting, as only the two days will be available for the work. J. Taft, Frank Abbott, A. O. Hunt, Executive Committee.

**The Mitchell District Medical Society** held its twenty-third annual meeting at West Baden Springs, Indiana, July 12-14. President, Dr. Dudley S. Reynolds, Louisville; secretary, Dr. G. W. Burton, Mitchell, Ind.

**Notice to Intending Contributors to the Proceedings of the Pan-American Medical Congress.**—The regulation of the congress providing that abstracts of papers shall be in the hands of the secretary-general on or before July 10, was framed to give the Literary Bureau ample time in which to make the necessary translations, and publish the four editions of the book before the assembling of the congress. The request that abstracts be sent in even before the date indicated has been so generally complied with, and the work is so far advanced, that the Literary Bureau finds itself in position to accept abstracts during the remainder of July. To insure careful translation and publication, however, they should be sent in at the earliest possible date.

It is suggested that abstracts be made as full as possible within the 600-word limit.

CHAS. A. L. REED, *Sec'y General.*

311 Elm St., Cincinnati, July 10, 1893.

**Congress of Education.**—A world's Congress of Education will be held in Chicago, July 25-28, 1893, under charge of the National Educational Association, United States of America.

COMMITTEE.

In General Charge.—William T. Harris, Commissioner of Education, U. S.

DEPARTMENTS.

Higher Education.—Prof. Nicholas Murray Butler, Columbia College, New York city.

Secondary Education.—Principal Ray Greene Huling, New Bedford, Mass.

Elementary Education.—Inspector James L. Hughes, Toronto, Ontario.

Kindergarten Instruction.—Mrs. W. N. Hailman, LaPorte, Ind.

School Supervision.—Supt. W. H. Maxwell, Brooklyn, N. Y.

Professional Training of Teachers.—Principal E. O. Lyte, Millersburg, Pa.

Instruction in Art.—Pres. James McAllister, Drexel Institute, Philadelphia.

Instruction in Vocal Music.—Director N. Coe Stewart, Cleveland, O.

Technological Instruction.—Prof. Henry Morton, Stevens Institute, Hoboken, N. J.

Industrial and Manual Instruction.—Dr. Andrew J. Rickoff, New York city.

Business Education.—Pres. R. C. Spencer, Milwaukee, Wis.

Physical Education.—Prof. D. A. Sargent, Harvard University, Cambridge, Mass.

Rational Psychology in Education.—Pres. J. G. Schurman, Cornell University, Ithaca, N. Y.

*Experimental Psychology in Education.*—Prof. George T. Ladd, Yale University, New Haven, Conn.

Educational Publications.—Mr. C. W. Bardeen, Syracuse, N. Y.

All the meetings to be held in the Memorial Art Palace, Michigan Avenue, foot of Adams street, Chicago.

Among the interesting papers on the program we notice the following:

Address by General Francis A. Walker, President of the Department.

Thesis: "How far do the technological schools, as they are at present organized. accomplish the training of men for the scientific professions, and how far and for what reasons do they fail to accomplish their primary purpose?" Discussion.

Thesis: "Should an antecedent liberal education be required of students in Law, Medicine and Theology?

Thesis: "The early history and organization of the Sheffield Scientific School at New Haven. Discussion.

Thesis: "The educational value of laboratory work in exact measurement." Discussion.

Thesis: "The educational value of the laboratory study of electricity." Discussion.

FOREIGN DELEGATES TO THE CONGRESS.

Delegates from the following named countries have accepted the invitation and expressed their intention of being present at the congress:

England and Wales, Scotland, Ireland, Ontario, Quebec, Nova Scotia, New Brunswick, British Columbia, Manitoba, Jamaica, New South Wales, Victoria, New Zealand, Sandwich Islands, France, Prussia, Saxony, Würtemburg, Saxe-Weimer-Eisenach, Duchy of Hesse, Mecklenburg-Schwerin, Austria-Hungary, Switzerland, Belgium, Netherlands, Spain, Portugal, Mexico, Guatemala, Brazil, Argentine Republic, Uruguay, Ecuador, Cuba, Italy, Sweden, Norway, Russia, China, Japan, India, and Algiers.

## SELECTIONS.

**Medico-Legal Institute.**—The *Journal de Medicine* says that the Municipal Council of Paris have voted to establish a Medico-Legal Institute near the Morgue, with which it will communicate by means of a tunnel, and by a small tramway cadavers will be carried to and from the morgue. The institution comprises a laboratory for toxicological examinations, room for students, a library, a museum and an amphitheatre, (that at the morgue at present will only accommodate a few students) a special room will also be provided for families of deceased persons, and a room for magistrates during "confrontations."

**Diuretin in Diseases of the Heart and Kidney.**—*Pawinski* has published a memoir on salicylate of sodium and theobromin (*diuretin*). It is incontestable that this substance is endowed with diuretic properties. The maximum diuresis was attained four or five days after beginning treatment.

Diuretin often provokes more or less excitement of the nervous system and the brain; the author has observed following its use buzzing in the ears, drowsiness, or insomnia. He remarks that these secondary effects are less pronounced shortly after the administration of caffein.

As a general rule, diuretin is more efficacious in affections of the heart muscle, than in valvular disease, or of the orifices; and in nephritis. In the latter case favorable results are still more probable when the œdema is dependent upon defective cardiac energy. Interstitial nephritis is benefited by diuretin, but it is powerless in cases of ascites following hepatic cirrhosis, or epiplooic carcinoma, or in pleuritic exudates.

Pawinski prescribed diuretin in doses of three to five grams a day. When diuretin has been given in any case for six days without increase of diuresis he advises that recourse be had to digitalis or caffein. He prefers to give diuretin in solution; when given in powder one part of theobromin is precipitated on account of its combination with the carbonic acid of the air and becoming insoluble. In the choice between caffein or diuretin, one is guided by the rule that caffein is indicated in cases of adynamia, while diuretin is indicated in cases of erethism (irritability).—*Journal de Medicine*, Paris, June 24.

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## ASSOCIATION NEWS.

**The meeting** of the American Medical Association here next year will be the second visit of the Society to this coast. The first meeting was in 1870, and was a sad failure. It found the medical fraternity of California cut up into small cliques—that curse of our profession. Then California was thoroughly provincial: the connection with the east by rail had just been established. The medical men were from all parts of the world. The California medical societies had as yet made very little progress in uniting them socially; every fellow was for himself, or at least every little clique was for itself. We hope and believe that the Association will receive a most hearty welcome at the hands of a united profession, not only of San Francisco, but of the whole coast. We must assume the virtue of unity, if we have it not. The Association is accustomed to be handsomely entertained by the profession and citizens, and if they do not receive a California welcome from our citizens the fault will be with the medical profession, as it was before. Let us, one and all, resolve to make the meeting of the American Medical Association here next year worthy of California and the grandest event in the history of that Society. The selection of Dr. R. H. Plummer for chairman of the committee of arrangements is a fortunate one. It requires just such experience, untiring energy and perseverance as our friend Dr. Plummer possesses, to make a grand success of such an occasion.—*Pacific Medical Journal.*

**The London Lancet** of July 1, contains an extended notice of the Milwaukee meeting and thus concludes:

We wish all success to the Association. It has difficulties to meet in the vast area of its territory and in the consequent varied conditions of life and practice. But it should be supported by the profession, and, as the Mayor of Milwaukee suggested, should be welcomed by all communities as representing a calling indispensable to civilization.

## SOCIETY NEWS.

**American Dental Association.**—The thirty-third annual session of the American Dental Association will be held in Chicago, commencing Saturday, August 12, 1893, at 10 o'clock, A. M. Geo. H. Cushing, *Rec. Secretary.*

**The Association of Military Surgeons of the National Guard** of the United States will hold its annual meeting at Chicago, August 8, 9 and 10, 1893, under the presidency of Dr. N. Senn.

**American Electro-Therapeutic Association.**—The third annual meeting of the American Electro-Therapeutic Association will be held in Chicago, September 12, 13 and 14, at Appollo Hall, Central Music Hall block.

Members of the medical profession interested in electrotherapeutics are cordially invited to attend.

Augustin H. Goelet, M.D., *Presideat.*

Margaret A. Cleaves, M.D., *Secretary.*

**National Association of Dental Faculties.**—The annual meeting will be held in the house of the Columbian Dental Club, Chicago, No. 300 Michigan Avenue, beginning on Thursday, August 10, at ten o'clock A. M., and continue probably through that and the succeeding day. It is important that all matters of business to come before that meeting be properly prepared beforehand, so that business can go promptly forward. It is to be hoped that all persons interested will give special attention to this request, and that every member be promptly present at the beginning of the meeting, as only the two days will be available for the work. J. Taft, Frank Abbott, A. O. Hunt, Executive Committee.

**The Mitchell District Medical Society** held its twenty-third annual meeting at West Baden Springs, Indiana, July 12-14. President, Dr. Dudley S. Reynolds, Louisville; secretary, Dr. G. W. Burton, Mitchell, Ind.

**Notice to Intending Contributors to the Proceedings of the Pan-American Medical Congress.**—The regulation of the congress providing that abstracts of papers shall be in the hands of the secretary-general on or before July 10, was framed to give the Literary Bureau ample time in which to make the necessary translations, and publish the four editions of the book before the assembling of the congress. The request that abstracts be sent in even before the date indicated has been so generally complied with, and the work is so far advanced, that the Literary Bureau finds itself in position to accept abstracts during the remainder of July. To insure careful translation and publication, however, they should be sent in at the earliest possible date.

It is suggested that abstracts be made as full as possible within the 600-word limit.

Chas. A. L. Reed, *Sec'y General.*

311 Elm St., Cincinnati, July 10, 1893.

**Congress of Education.**—A world's Congress of Education will be held in Chicago, July 25-28, 1893, under charge of the National Educational Association, United States of America.

COMMITTEE.

In General Charge.—William T. Harris, Commissioner of Education, U. S.

DEPARTMENTS.

Higher Education.—Prof. Nicholas Murray Butler, Columbia College, New York city.

Secondary Education.—Principal Ray Greene Huling, New Bedford, Mass.

Elementary Education.—Inspector James L. Hughes, Toronto, Ontario.

Kindergarten Instruction.—Mrs. W. N. Hailman, LaPorte, Ind.

School Supervision.—Supt. W. H. Maxwell, Brooklyn, N. Y.

Professional Training of Teachers.—Principal E. O. Lyte, Millersburg, Pa.

Instruction in Art.—Pres. James McAllister, Drexel Institute, Philadelphia.

Instruction in Vocal Music.—Director N. Coe Stewart, Cleveland, O.

Technological Instruction.—Prof. Henry Morton, Stevens Institute, Hoboken, N. J.

Industrial and Manual Instruction.—Dr. Andrew J. Rickoff, New York city.

Business Education.—Pres. R. C. Spencer, Milwaukee, Wis.

Physical Education.—Prof. D. A. Sargent, Harvard University, Cambridge, Mass.

Rational Psychology in Education.—Pres. J. G. Schurman, Cornell University, Ithaca, N. Y.

Experimental Psychology in Education.—Prof. George T. Ladd, Yale University, New Haven, Conn.

Educational Publications.—Mr. C. W. Bardeen, Syracuse, N. Y.

All the meetings to be held in the Memorial Art Palace, Michigan Avenue, foot of Adams street, Chicago.

Among the interesting papers on the program we notice the following:

Address by General Francis A. Walker, President of the Department.

Thesis: "How far do the technological schools, as they are at present organized. accomplish the training of men for the scientific professions, and how far and for what reasons do they fail to accomplish their primary purpose?" Discussion.

Thesis: "Should an antecedent liberal education be required of students in Law, Medicine and Theology?

Thesis: "The early history and organization of the Sheffield Scientific School at New Haven. Discussion.

Thesis: "The educational value of laboratory work in exact measurement." Discussion.

Thesis: "The educational value of the laboratory study of electricity." Discussion.

FOREIGN DELEGATES TO THE CONGRESS.

Delegates from the following named countries have accepted the invitation and expressed their intention of being present at the congress:

England and Wales, Scotland, Ireland, Ontario, Quebec, Nova Scotia, New Brunswick, British Columbia, Manitoba, Jamaica, New South Wales, Victoria, New Zealand, Sandwich Islands, France, Prussia, Saxony, Würtemburg, Saxe-Weimer-Eisenach, Duchy of Hesse, Mecklenburg-Schwerin, Austria-Hungary, Switzerland, Belgium, Netherlands, Spain, Portugal, Mexico, Guatemala, Brazil, Argentine Republic, Uruguay, Ecuador, Cuba, Italy, Sweden, Norway, Russia, China, Japan, India, and Algiers.

## SELECTIONS.

**Medico-Legal Institute.**—The *Journal de Medicine* says that the Municipal Council of Paris have voted to establish a Medico-Legal Institute near the Morgue, with which it will communicate by means of a tunnel, and by a small tramway cadavers will be carried to and from the morgue. The institution comprises a laboratory for toxicological examinations, room for students, a library, a museum and an amphitheatre, (that at the morgue at present will only accommodate a few students) a special room will also be provided for families of deceased persons, and a room for magistrates during "confrontations."

**Diuretin in Diseases of the Heart and Kidney.**—*Pawinski* has published a memoir on salicylate of sodium and theobromin (*diuretin*). It is incontestable that this substance is endowed with diuretic properties. The maximum diuresis was attained four or five days after beginning treatment.

Diuretin often provokes more or less excitement of the nervous system and the brain; the author has observed following its use buzzing in the ears, drowsiness, or insomnia. He remarks that these secondary effects are less pronounced shortly after the administration of caffein.

As a general rule, diuretin is more efficacious in affections of the heart muscle, than in valvular disease, or of the orifices; and in nephritis. In the latter case favorable results are still more probable when the œdema is dependent upon defective cardiac energy. Interstitial nephritis is benefited by diuretin, but it is powerless in cases of ascites following hepatic cirrhosis, or epiplooic carcinoma, or in pleuritic exudates.

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A little more than a year has elapsed since the first edition of this book made its appearance, a fact which must be gratifying to the author. Dr. Martin is scarcely as enthusiastic as formerly in regard to cures of myo-fibromata by the Apostoli method as modified by himself. At the International Medical Congress of Washington he asserted that the method was free from danger; painless; that it invariably checked hemorrhage; rapidly reduced the size of the tumors; stopped neuralgic pains, and by exact dosage of the electricity constituted a system of treatment. He now says: "We have discovered by developing it that it will not cure all cases of fibroid tumors of the uterus; that there is still room for the scalpel. About 75 per cent. of all fibroid tumors of the uterus, however, because of electricity, should never be touched with the knife." Dr. Martin emphasizes his previously expressed views that tumors of a cystic nature are not suitable cases for electrical treatment. Four new chapters have been added to the first edition, which give it a wider scope than the title of the book would seem to indicate. The work gives the improved technique of electro-therapeutics very thoroughly, and is an improvement on its predecessor. There are some typographical errors, however, such as "endocervicetus," on page 189, but the book is printed on excellent paper, and the illustrations are fairly good.

## MISCELLANY.

**The Illinois Board of Health.**—The Illinois State Board of Health at its meeting held in Chicago, July 5, elected Dr. Wm. E. Quine, of Chicago, as President, and Dr. Scott of Evanston as Secretary.

**A Gas Gun.**—The Giffard gun, which projects balls by gas instead of powder, was tested at Nottingham recently. The propelling agent is liquefied carbonic acid gas. The firing of the gun produces no smoke and makes little noise. Bullets fired through one inch board were flattened on the iron backing of the target.—*N. Y. Sun.*

**Change of Address.**—Frank Parsons Norbury, M.D., removed to Hoffman Building, Jacksonville, Ill.

**The Board of Health of Philadelphia** has requested the physicians of that city not to place on any certificate "*Heart Failure*" as the cause of death, but the disease of which the patient was suffering prior to the heart failure. This term has never been placed on the list of diseases adopted by the board, it being looked upon as a result of some other illness of which the patient was suffering. Furthermore, it furnishes an opportunity to conceal contagious diseases, and thus permits the ignoring of the rules of this board by the family and undertaker, either innocently or designedly. Hereafter a burial permit will not be issued on the certificate of death of "*Heart Failure,*" when unaccompanied with the disease from which the heart failure occurred.—*College and Clinic Record,* June, 1893.

**Disinfection by Electricity.**—The trial of a new electrical disinfection apparatus was made by the New York city authorities at Brewster's, New York, July 6. The dispatches of the trial, possibly somewhat colored by the sender, state "at the close of the experiments Commissioner of Public Works Daly said:

I regard the electrical disinfectant of Prof. Woolf as one of the most beneficial discoveries of the age. I am entirely satisfied with the result of the experiments.

Health Commissioner Dr. Edson said:

I have no doubt whatever that this is the cheapest and most effective means of disinfecting that has been devised. We have in this disinfectant, in my opinion, an agent combining powerful disinfecting and deodorizing properties which can be produced at a low cost and can be made in any quantity. It is a disinfectant that, in consequence of its cheapness and non-poisonous quality, can be used so freely and unreservedly as to make its discovery one of the most important, from a sanitary standpoint, that has ever been made.

With apparatus costing $5,000, which is run at a cost of $4 a day, Prof. Woolf stated that 4,000 gallons of the disinfectant were produced every twenty-four hours. The disinfecting fluid is conveyed by a pipe into the sewer, and it is claimed that it will kill the germs of all contagious diseases, including those of cholera, diphtheria, scarlet fever, measles, typhoid and typhus fever. The party subsequently witnessed experiments in disinfecting putrid meat and other matter. In less than one minute a piece of putrid meat subjected to immersion in the disinfecting fluid was restored to a healthy color and the offensive odor was entirely destroyed."

This dispatch manifestly exaggerates the facts, but there is enough to warrant further inquiry.

**A Busy Doctor.**—Dr. Liddell's morning levees were crowded beyond description. It was his pride and boast that he could feel his patient's pulse, look at his tongue, sound him with stethoscope, write his prescription and pocket his fee in a space of time varying from two to five minutes.

One day an army man was shown into the consulting room and underwent what might be termed the instantaneous process. When it was completed the patient shook hands with the doctor and said:

"I am especially glad to meet you, as I have often heard my father, Col. Forester, speak of his old friend Dr. Liddell."

"What!" exclaimed the doctor, "are you Dick Forester's son?"

"I am, sir."

"My dear fellow!" exclaimed the doctor, "fling that prescription into the fire, will you, please, and sit down and tell me what is the matter with you?"—*Waverly Magazine.*

**The Typhoid Epidemic at Ironwood, Michigan.**—We published last week a very interesting report from Dr. Henry B. Baker, Secretary of the State Board of Health of Michigan, on the epidemic prevailing at Ironwood. The following associated press dispatches show the tension prevailing:

ISHPEMING, Mich., July 8.—[Special.]—The board of health at Ironwood will officially advise all who can do so to leave the city for the summer. New cases of typhoid fever are still appearing daily. The water is being hauled to the afflicted city, even from Milwaukee. One hundred families are already dependent on charity, and as the city funds are exhausted and the county poor fund is empty, private charity is alone keeping many from starvation.

IRONWOOD, Mich., July 8.—Supt. S. A. Strouther of the Ironwood Water-Works company is under arrest at Hurley, Wis., just across the State line. Requisition papers have been issued. He will be taken to Bessemer for safety, as threats are openly made here to lynch him. He is considered responsible for the present fearful epidemic of typhoid fever. The mines are closed down here because of the violent epidemic raging, and there is no money for the relief of hungry hundreds.

**Yellow Fever in Brazil and Colombia.**—The brig Odorilla arrived at Philadelphia, July 10, from Santos. Capt. Holland alone of the original crew of eight survived the yellow fever. Thousands there died of the disease. Forty-five vessels are in the Santos river without crews. The local banks are closed, all the employes having died. The members of the firm, consignees of the Odorilla, have nearly all died. Charles Wadsworth, the American Vice-Consul, also died. Capt. Holland believes the port will soon be depopulated. The patients die more rapidly than their bodies can be disposed of.

NEW YORK, July 9.—A German named Woll. who has just returned from the United States of Colombia, tells a harrowing tale of suffering and wrong. He said that last March he and about 250 Germans, Swedes, Irishmen and Poles were engaged to work on the Magdalena and Carthagena railroad in Colombia. Their passage was to be paid by the railroad company, and if they worked six months the company would pay also their passage back. When they got to the place where the railroad was being built they found the land swampy, and many of them were soon ill with yellow fever and other diseases. The company gave them no medical aid, and they had to take care of one another. When they asked to be sent back to this country they were told that they had not kept their compact to work six months. Woll says that over 100 of the men died within a short time and that of the entire number only sixty-five lived to return north.

**Holmes' Country Life. Pittsfield, His Country-Estate, was the Bequest of Ancestors.**—I was curious to know about Dr. Holmes' experience of country life, he knows all nature's processes so well, writes Edward Everett Hale in *McClure's Magazine*. So he told me how it happened that he went to Pittsfield. It seems that a century and a half ago his ancestor, Jacob Wendell, had a royal grant for the whole township there, with some small exceptions, perhaps. The place was at first called Pontoosoc, then Wendelltown, and only afterward got the name of Pittsfield from William Pitt. One part of the Wendell property descended to Dr. Holmes' mother. When he had once seen it he was struck with its beauty and fitness for a country home, and asked her that he might have it for his own. It was there that he built a house in which he lived for eight or nine years. He said that the Housatonic winds backwards and forwards through it, so that to go from one end of the estate to the other in a straight line required the crossing it seven times. Here his children grew up, and he and they were enlivened anew every year by lomg summer days there.

He was most interesting and animated as he spoke of the vigor of life and work and poetical composition which come from being in the open air and living in the country. He wrote, at the request of the neighborhood, his poem of "The Ploughman," to be read at a cattle-show in Pittsfield. "And when I came to read it afterwards I said, 'Here it is! Here is open air life, here is what breathing the mountain air and living in the midst of nature does for a man!' And I want to read you now a piece of that poem, because it contained a prophecy." And while he was looking for the verses, he said, in the vein of the Autocrat, "Nobody knows but a man's self how many good things he has done."

**Medical Society of New Jersey. Circular on Asiatic Cholera.**—The Medical Society of New Jersey at its 127th annual meeting, June 27, 1893, ordered to be printed the following outline of essential points to be observed and emphasized by the physicians in times of threatened invasions of cholera, as presented by Dr. D. C. English, chairman, in the report of the Standing Committee:

TO PREVENT THE INTRODUCTION OF CHOLERA INTO A COMMUNITY.

1. Inquire into the sanitary administration in your community and give your most energetic efforts to secure its improvement.

2. Obtain the services of men of sterling character and superior executive ability as members of your Board of Health.

3. Require frequent inspections and scrupulous cleanliness of all places, public and private, particularly every street and alley; every sewer, drain, cesspool, vault and pit; every dwelling, store and office, including the plumbing; every yard, out-house and stable.

4. Cause all surface wells to be examined and close up those that are found to be polluted.

5. Establish or perfect a system for the daily removal and safe disposal, by fire if possible, of all garbage, sweepings, rags and other domestic refuse.

6. Be prepared to skillfully and effectually disinfect, at public expense, all infected persons, clothing, baggage, vehicles and premises. Cause a supply of standard disinfectants to be kept ready for use by the health authorities.

7. Exclude from the markets all unwholesome food.

8. Provide and keep in readiness a suitable hospital for communicable diseases, and make engagements with physicians and attendants in anticipation of the need of their services.

9. Instruct the people in regard to the nature of the disease; its mode of communicability; the value of thorough sanitation; how to live; what to eat; the importance of using recently cooked foods; the necessity of boiling drinking water; the uselessness of deodorizers and the benefit to be derived from a liberal use of soap and water, and from pure air and sunshine.

10. Prevent the entrance of infected persons and effects into your community. Isolate every "suspect." Keep ready for reference Circular 45 of the New Jersey State Board of *Health*.

To arrest its spread after its first appearance in the community:

1. Provide competent employes to carry out rules and directions of physicians and board of health.

2. Promptly and completely isolate all cases of the disease, and also all "suspects."

3. Watch all apparently innocent diarrhœas.

4. Thoroughly disinfect all choleraic discharges from patients before emptying into place of deposit. Completely disinfect all vessels, clothing, bedding and everything used by the infected person or in the sick room or house. Burn all garments and articles which are soiled by contact with the discharges.

5. In case of death of patient wrap the body in a sheet or blanket which is saturated with a solution of bichloride of mercury, 1 to 500, and pack the coffin full of quicklime. Bury the body privately, with no attendants except those necessary to insure proper burial at least five feet below the ground surface.

6. Give information to the public as to the existence and progress of the disease. Discourage popular fear. Provide free medical service for the poor and have it promptly rendered. Urge upon the people the greatest care in the selection of digestible food and its proper preparation by cooking; present the danger from the use of unboiled water; the advantage of avoiding all excesses. Especially urge upon the people the observance of the strictest cleanliness of person and surroundings.

An excellent paper on "Quarantine of Cholera" was also presented by William Elmer, M.D., of Trenton, N.J.

**The Plague at the Holy City. Mecca a most Serious Menace to the Health of the World.**—New York *Tribune:* The epidemic of cholera at Mecca is making steady progress. A fortnight ago the deaths daily were counted by dozens. A week ago they numbered hundreds. Now they have reached the thousand mark. How much further the roll is to be swelled depends chiefly upon the number of pilgrims who remain in the stricken city. The local authorities can do nothing to stay the pestilence. It must rage until the population is decimated, and then subside like a fire that burns itself out. That has been the record of former epidemics, and there is no ground for hoping any other result in the present case. The root of the evil lies not so much in natural conditions as in ignorance and fanaticism.

Although Mecca lies in a valley with poor facilities for drainage and in a torrid climate it might, under proper administration, be made fairly salubrious. The soil is light and dry, the streets are of good width, and the water supply, brought from afar through a fine aqueduct, is pure and abundant. There is, however, not a sewer nor even a well-constructed surface drain in the city, nor are any of the houses properly equipped with plumbing or other sanitary device. Sewage and offal are simply discharged into open pits in the middle of the streets there to reek, ferment and poison the soil and air. At ordinary times, with the normal population of about 50,000, the place is foul. But when in Zu'l Hija, the pilgrimage month, 50,000 to 80,000 visitors are in the city, from all parts of the Moslem world, the majority of them living in the streets, it becomes indescribably vile.

Even these conditions, bad as they are, would scarcely make the place the plague spot that it is were it not for the religious fanaticism of the pilgrims. Not only does every Mohammedan seek once to visit Mecca, but when there he drinks from the holy well of ZemZem or Hagar's well. This is the only well remaining in use in the city, all others having been abandoned at the opening of the aqueduct. Its water is believed by the faithful to possess miraculous qualities, and perhaps it does. But the miracle is one of vice, and not of virtue. A careful analysis of the water, made last year, shows it to be so contaminated by drainage from the cesspools in the streets as to be a rank poison. Compared with it the water supply of London is a model of purity. Thus, while the water of London contains eighteen grains of solid matter in the gallon, that of Hagar's well has more than 225 grains; and while the former has no respect which we owe to our priceless professional heritage, with all its manifold imperfections, but that we shall also hastily reject with the worthless some of those really invaluable drugs of the materia medica which, although temporarily displaced by their more modern rivals, will probably continue to vindicate their substantial therapeutic worth through the vacillations of all time. To illustrate my last assertion, I need but instance one single agent, that of mercury in the treatment of syphilitic disease. It has descended to the present generation through the mists of antiquity, it has been handicapped with the absurdest pretensions and abuses of its virtues by the most arrant quacks, it has been occasionally reprobated, when in the unskillful hands of even orthodox physicians, as productive of more harm than good; but despite all its perturbations of history, and making all the deductions for the odium into which it has at times deservedly fallen by reason of its senseless and indiscriminate employment, it still remains, and for aught we know will continue to remain, an absolutely indispensable weapon for our successful warfare against syphilis down to the last recorded syllable in the annals of venereal diseases.

In the medical literature of the past there is likewise not a little that survives to excite our respect and admiration, and while that little may for the most part be unreliable now for our unrestricted guidance, it at least helps us, as the still visible but fast receding landmarks serve the mariner, to take our correct bearings, and to navigate with increased safety amid the rocks and reefs and along the siren shores of our modern age of constant revolution and change.

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Syria and Chaldea, the latter having for its capital Babylon, were noted in ancient times as the center of all debaucheries. On the Assyria-Babylonian cuneiform inscription tablets in the British Museum, derived from the royal library of Sardanapalus, it is related that Istar, the goddess of sinful love, proposed to Nimrod to become his wife, a proposition which the latter very ungallantly refused. Istar demanded satisfaction for this insult from her father Anu. As a result the sacred bull was sent against Nimrod and his friend, Eabani. Eabani seized the animal by one horn and the root of its tail, while Nimrod fatally bored its heart with a weapon. Istar uttered an awful curse, to which Eabani replied by tearing out the penis of the bull and throwing it full in her face. A new curse was hurled by the goddess, and Eabani died after a short illness. Nimrod was likewise attacked with a painful disease. He wandered about until he reached the infernal regions, where he was given a "magic food" for his complaint. This remedy apparently had no effect, for Nimrod continued to complain that the shadow of death lay on his genitals. The god of the infernal regions then took him to the ferryman, and bade him take the hero to the fountain of life, saying: "The man whom thou hast taken has his body covered with pustules; scales have altered the fairness of his body. Take him to the cleansing place, where he can wash his pustules clean, and take off his skins; the sea will carry them off; his body will appear well. The coverings of his head will be renewed, and also the covering of his shameful parts; by the time he returns to his country, there will be no folds; all will be new." Then follows after an interruption in the text: '"He renewed his head coverings; the sheath which clothed his shameful parts was new when he reached his native land." I think we must concede to Dr. Buret that the foregoing is a pretty convincing picture of syphilitic disease. This author adds that Eabani also evidently had lues, for Nimrod prayed that he might not die like his companions; and Eabani moreover had spent six days and seven nights dallying with his beloved Uchat.

To return to the narrative concerning Abram and Sarai, Dr. Buret informs us, in accordance with scriptural account, that as the former conducted his fascinating wife into Egypt, he made her pass herself off as his sister, "fearing," as he said, "that the Egyptians might do him an evil turn by taking her from him." The beauty of Sarai gained him admission to the court of Pharaoh. The latter simply appropriated the beautiful Jewess to himself, and heaped her supposed brother with goods and presents.

The Bible states that God "visited Pharaoh and his house with great plagues, on account of Sarai, the wife of Abram," which is interpreted by Dr. Buret to mean that Pharaoh contracted from Sarai a venereal disease, which he transmitted to his other wives, or to those of his officers, who in turn gave it to others; in short, the whole court became infected.

Pharaoh, after having reproached Abram for not informing him that she was his wife, returned his goods to him, together with his dangerous mate, and dismissed them both. Later on, at Geurar, this husband made the same statements to Abimelech, the king of that country. At that time he called himself Abraham and his wife Sarah. After the same story of the sister, and the same exploits between her and the King, the latter hastened to return Sarah to her husband, and loaded both with presents. Abimelech had, none the less, contracted lues, which he communicated to the Queen and to his concubines. But upon the prayer of Abraham, according to Genesis, chapter xx, the Lord cured Abimelech, his wife and servants, and these could bear children. The Bible informs us that Sarah was for a long time sterile, and that all the women who were similarly infected were sterile. "For the Lord closed the womb of all the women of the house of Abimelech on account of Sarah, the wife of Abraham." Dr. Harmonic, of Paris, who published in 1887, a monograph on "Venereal Diseases among the Hebrews," comments as follows: "It is not irrational to suppose that syphilis was concerned in this sterility. It disappeared with age in Sarah, who became pregnant late, which is good proof that her sterility was not due to organic cause; and outside of syphilis, we cannot see any other disease of genital origin which would correspond with the foregoing facts."

Although not pursuing the chronological order of events, I will now let you hear how Dr. Buret disposes of the case of King David. The latter, the Bible relates, was enjoying the cool of the evening upon the terrace of his palace, when he espied a woman of rare beauty who was washing herself in a brook. He made inquiries and learned that she was the wife of one of his officers, one Uriah; he had her brought to him, said very little to her and found her docile in every respect. The entertainment having terminated, the present victim of David's wiles, who was named Bath-Sheba, quietly returned home. It is not known whether she returned after to see the King, but it is probable; at all events, she became pregnant. Then David bethought him of getting rid of the husband, and found nothing better than to charge one of his generals, who was on a campaign, to place him in the most dangerous post, so that he might be killed—which happened, as a matter of fact.

Bath-Sheba put on mourning and David married her. She was delivered. Up to that time, nothing was more simple. But the two lovers had reckoned without the Lord, for the latter sent a prophet to David, to rail at him and warn him that he would be punished where he had sinned. According to Kings, chapter xii, the prophet Nathan brought to David the decision of Jehovah, formulated in these words: "For the Lord has spoken thus: Behold, I will visit evil upon thee and upon thy house; the son who is born to thee will die." As a matter of fact, in spite of David praying to the Lord, fasting, lying on the ground, etc., the child fell ill, and "died at the end of seven days."

Dr. Buret maintains on biblical evidence which will presently follow, that David contracted syphilis from Uriah's wife, and that tertiary accidents rapidly declared themselves in this libidinous king; suggesting that he may not have troubled himself about the first two periods of his disease, or may have experienced them in a light form; for, nine or ten months later, at the least, inasmuch as Bath-Sheba had time to arrive at term, the symptoms of the tertiary stage manifested themselves by osteocopic pains, ulcerated gummata, syphilitic caries, etc.

Let us now listen to the lamentations of David in the Book of Psalms, who will himself describe with poetic metaphors, the symptoms of his disease:

"Pity me, O Lord, for I am ill; cure me, O Lord, for my bones are diseased; I am the opprobrium of men; all those who have seen me and mocked me." David would probably have been pitied, instead of being mocked, if the nature of his disease had not been known.

"There is nothing healthy in my flesh; my ulcers are putrid and corrupt on account of my folly." Here ulcerated gummata are described, and allusion is made to the shameful source of his malady. "The light of my eyes is no more with me." Dr. Buret in this sees a common accident of the transition period, iritis, or the sequelæ of this inflammation.

"Day and night thy hand weighs upon me." This was probably a nocturnal cephalagia. He did not even have sleep to forget his trouble. "My bones leave me no peace on account of my transgressions." Galligo, an Italian medical author, who has also contributed a large share to the literature of this subject, avers that "King David suffered chiefly from osteocopic pains, incident to syphilis."

"All my bones separate; I am an opprobrium; those who were near me now stand aloof; all those who have seen me abroad run away from me." He thus hints significantly at syphilitic caries, and for the second time he makes us understand that he had a contagious disease which nobody trusted.

Dr. Harmonie, before quoted, says: "The symptoms mentioned in the Psalms of David, although somewhat vague, have none the less a great diagnostic value, especially if they are grouped and placed in relation to one another. Here is a man who contracted from a woman he rendered pregnant a disease of genital origin, whose symptoms are marked, since they are those upon which the patient especially insists, consisting in terrible pains, coming on chiefly at night, and in alteration of the bones. The bones are the seat of acute suffering. They disintegrate and separate (by caries or necrosis). Purulent and chronic ulcer occur, and are probably related to the diseased bones. It must be through that the fragments of bone escape."

The patient loses his strength, and falls into a marked cachexia. His emaciation is extreme. His mouth (especially the tongue) is diseased. He is a disgusting object to everybody. The morbid symptoms at first localized, become more and more general ("there is nothing healthy in my flesh") and, what caps the climax, the eyes are implicated and the sight is obscured. Visceral symptoms appear at a given time, and this terrible general disease plunges the unfortunate David into a hypochondria and discouragement which it is easy to understand, in view of the chronicity of the lesions and of their resistance to the inadequate thereapeutics directed against them. Furthermore, the child borne by Bath-Sheba, who had transmitted her disease to David, died at the end of seven days, a fact which, when added to respect which we owe to our priceless professional heritage, with all its manifold imperfections, but that we shall also hastily reject with the worthless some of those really invaluable drugs of the materia medica which, although temporarily displaced by their more modern rivals, will probably continue to vindicate their substantial therapeutic worth through the vacillations of all time. To illustrate my last assertion, I need but instance one single agent, that of mercury in the treatment of syphilitic disease. It has descended to the present generation through the mists of antiquity, it has been handicapped with the absurdest pretensions and abuses of its virtues by the most arrant quacks, it has been occasionally reprobated, when in the unskillful hands of even orthodox physicians, as productive of more harm than good; but despite all its perturbations of history, and making all the deductions for the odium into which it has at times deservedly fallen by reason of its senseless and indiscriminate employment, it still remains, and for aught we know will continue to remain, an absolutely indispensable weapon for our successful warfare against syphilis down to the last recorded syllable in the annals of venereal diseases.

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In the fifth book of the Proverbs of Solomon, are to be found a few impressive words of advice which go to show that cohabiting with the prostitutes of the time might be followed by painful and disastrous remembrances, capable of lasting for years, and of gravely compromising the general health. "We again show our preference," writes Dr. Buret, for the Latin version of the Hebrew text edition of 1715, in the National Library at Paris, in order that the reader may see for himself that our interpretation has nothing in it of a fantastical nature: "For e lips of the harlot distill honey; but the conse-ces are as bitter as wormwood, and as sharp as ble edged sword; do not draw near the gate of house, lest thou shouldst give up thy honor to angers, and the remainder of thy life to something cruel; and that thou mayst not groan later, when thy flesh and thy body will have been destroyed through thy fault." Despite Solomon's wise and impressive counsels to beware of arlot, his graphic lessons have profited bu ince his death.

Therefore the wrath of Jehovah made itself felt, and manifested itself in an epidemic disease, which spread like a train of powder and decimated the Israelites. Moses taking active alarm, caused all those that had bowed to Baal to be killed: that is to say, all those who had had relations with the Moabite women, for they were all infected, or likely to be. "Twenty-four thousand men were thus killed by the steel," says the text, a prophylaxis which would in our day be viewed as extremely radical. Jehovah is made to say: "In order to appease my anger, let each chief of the tribes sacrifice those of his tribe who have gone over to Baal Peor." Later on, the Bible adds this remark: "Thus the plague was averted, after having cost the lives of 24,000 men." Many commentators of the Hebrew text have departed from this to explain that the 24,000 men died of the disease, but this is contradicted by the text itself. Besides, Philon and Josephus, Jewish historians, expressly state that this massacre was ordered by Moses.

At all events, this terrible execution did not suffice to destroy the root of the evil; for Joshua, seventeen years later, while reproaching the Hebrews for their debauchery, plainly says, (Joshua, chapter XXII): "Is it not enough for you to have committed the sin of following the worship of Baal Peor, a sin whose sign exists unto this day?" Nearly seven centuries later, in 810 B. C., the prophet Hosea, again had occasion to rail against those who sacrificed to the altars of Baal Peor, and he groaned over the results of this worship in the following terms: "They have been initiated in the mysteries of Baal Peor; and they have become terrible like those things which they worshiped."

Moses superadded to his trenchant domestic precautions against the scourge of Baal Peor, a declarthe Lord will cause their hair to fall; instead of flowing hair it will be baldness." Is not alopecia syphilitica here distinctly pointed out as one of the inherent diseases of prostitution?

Again: "The appearance of their face speaks for them; they publish their sin, nor do they dissimulate."

"The Lord will cover thee with bad ulcers, from the soles of the feet to the head, upon the knees, on the legs, and thou wilst not get well." We here see described a generalized syphilitic eruption, with pustules and ulcerations.

"Thy sores will increase by the will of God, as also those thou hast given to thy progeny; then there will be large and presevering sores, the worst and most lasting lesions." Heredity is here clearly indicated.

The Hebrews were as much exposed as other people of Asia to contract venereal diseases, inasmuch as they had the depraved habits of all the Asiatics. Without mentioning Sodom and Gomorrah, does not Moses forbid, in Leviticus, incest, bestiality. perverted sexual relations, and even legal prostitution, which is the best proof that these vices existed? In spite of the most severe punishments, the Hebrews gave themselves up to these shameless excesses; and as prostitution was forbidden in their camp, they visited strangers, particularly the Midianites and the daughters of Moab. These latter initiated them into the worship of Baal Peor, or Belpheqor, a sort of Priapus, whose temples were nothing but places of debauchery. These orgies in common were eminently favorable to the communication of syphilis; and, as a matter of fact, it was rapidly propagated, and known as the plague of Baal Peor, the epidemic which has just engaged our attention.

That this plague of Baal Peor was actual syphilis appears to be an almost irresistible conclusion. It was of venereal origin, and it could have been neither gonorrhœa nor balano-posthetis, nor genital herpes, nor even chancroid, although these lesions, with the exception of the last, have been likewise established as being rife at that period among the Jews. These latter ailments alone would certainly not have alarmed Moses to the pitch of adopting such extraordinary and radical measures; even if they had multiplied, as a result of excessive coitus and uncleanness. The disease of Baal Peor was something more intense, more violent, and more dangerous to the public health. Flavius Josephus says, that it was highly contagious, and was frequently transmitted to members of the same family. It was plainly a disease that constituted a grave social danger, which Moses endeavored to avoid by all possible means. It was not leprosy. for this learned and experienced legislator was too keen an observer of phenomena to make a gross error of diagnosis between diseases which already existed among his people, and the new epidemic. To read even the fragmentary detached accounts of its clinical symptoms furnished by the Bible, one might almost fancy them a summary of one of these monographs of the fifteenth century treating of the *morbus gallicus*.

The present speaker here records his belief that the epidemic of Baal Peor was frankly and purely syphilis. Not syphilis as it first stole upon this globe, to curse its human occupants perhaps forever, but a revival of it akin to that outbreak which in mediæval times lashed humanity with such fury and virulence at the siege of Naples. Nor, in all probability, was it syphilis as it exists to-day. All the recognizable features of the latter were no doubt there, but, fortunately for our patients, there was more of the pristine and unmitigated sting in the ancient form.

Buret also refers to the work of Captain Dabry, who translated the records of the Chinese Empire. Dabry found that syphilis was very common among the Chinese about 2700 years B. C. Their records then speak of it as an old disease, and one for which mercury was in general use. This Chinese record antedates the appearance of the disease in Egypt in the family of Pharaoh. We find also from this book that wherever prostitution existed syphilis was its companion. The former being as old as the human race, it seems very evident that the latter is also. But we find older records than the Mosaic or the Chinese. Its history has been written and may to-day be traced in monuments more lasting than written records. Wherever human remains have been found, even there the record may be traced. We know that to-day hereditary syphilis manifests itself in unmistakable evidences on the bones, especially in the form of exostoses about the superciliary arches, the frontal and parietal bones. These evidences, wherever found to-day, are pathognomonic of syphilis. Then if we find remains of the buried races of the past bearing these syphilitic exostoses, we may unhesitatingly affirm that the subject was the victim of hereditary syphilis. Buret has collected all the evidences bearing on this point, and we find syphilitic skulls and tibiæ have been excavated from the caves and dolmens of France, from the tombs of the Incas and the mounds of the mound builders of the United States, which bear unmistakable evidences of hereditary syphilis in the form of syphilitic nodes. Those who are in a position to know the value of these discoveries estimate their age at 60,000 years.

At the outset of this address, which has already I fear transcended in length your most reasonable and indulgent bounds, I incautiously purposed to say much of Moses in his capacity as a health officer and hygienist to the Jews. But this intention must now be abandoned, or postponed, which is perhaps a greater disappointment to me than to you. Suffice it for the present to say that of all the laws and precepts invented and instituted by Moses, the most brilliant were his rules of hygiene, applied to the enforcement of scrupulous cleanliness, and thereby to the limitation and extinction of disease.

If I may be permitted, after my very meager mention of the career of Moses as a hygienist and protector of his people against the ravages of disease, to estimate him for a moment in his guise as a man, as best befits a medical essay, and not in his character as a God-inspired liberator and ruler, I will add that the history of his life, derived from non-biblical, as well as biblical sources, irresistibly forces the reader's conviction of his grandly towering personality. As a military leader, he successfully braved, with his untrained warriors, a great King and his disciplined armies, and his rare administrative qualities enabled him later to mold the brutalized hordes of Egyptian slaves into a great nation. His calm self possession, impartiality, patience, perseverance, united with keen energy, promptness of action, and unfailing courage, constituted his extraordinary power over the hunthe others, naturally leads us to make the diagnosis of syphilis.

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In Ecclesiastes, Chapter XIX, a collection of maxims, also attributed to Solomon, would seem to refer to the tertiary period of syphilis: "He who has relation with prostitutes will become unclean, for everything gangrene and worms will seize upon him, and he will serve as a terrifying example to others."

The following verse of Leviticus, Chapter XIII, proves that there existed in scriptural times ulcers whose scars were white, and others that preserved a brownish color as in modern lues: "If an ulcer has arisen in the skin or within the flesh, and it has healed, there appears at the place where it existed, a scar, white or somewhat reddish."

From the information furnished by Rosenbaum, in his "History of Syphilis in Antiquity," the name "Baal Peor" signified among the Hebrews *the god Penis*, the Priapus of the Romans. His temple was built on the Mount Peor, and young girls repaired to it to prostitute themselves. This worship was analogous to that of Phallus, in the rest of Asia; and we may still see to-day in China, a phallus on a stone over the door of licentious houses, as it was in Pompeii.

Moses makes note in Numbers, chapter XXV, of the scourge which the Jews brought upon themselves by the worship of Baal, in the following words: "Israel tarried at Sittim and inhabited there; it fell into fornication with the daughters of Moab." In more symbolic terms, the Hebrews worshiped the gods of the daughters of the Moabites, and devoted themselves to the worship of Baal Peor.

Therefore the wrath of Jehovah made itself felt, and manifested itself in an epidemic disease, which spread like a train of powder and decimated the Israelites. Moses taking active alarm, caused all those that had bowed to Baal to be killed: that is to say, all those who had had relations with the Moabite women, for they were all infected, or likely to be. "Twenty-four thousand men were thus killed by the steel," says the text, a prophylaxis which would in our day be viewed as extremely radical. Jehovah is made to say: "In order to appease my anger, let each chief of the tribes sacrifice those of his tribe who have gone over to Baal Peor." Later on, the Bible adds this remark: "Thus the plague was averted, after having cost the lives of 24,000 men." Many commentators of the Hebrew text have departed from this to explain that the 24,000 men died of the disease, but this is contradicted by the text itself. Besides, Philon and Josephus, Jewish historians, expressly state that this massacre was ordered by Moses.

At all events, this terrible execution did not suffice to destroy the root of the evil; for Joshua, seventeen years later, while reproaching the Hebrews for their debauchery, plainly says, (Joshua, chapter XXII): "Is it not enough for you to have committed the sin of following the worship of Baal Peor, a sin whose sign exists unto this day?" Nearly seven centuries later, in 810 B. C., the prophet Hosea, again had occasion to rail against those who sacrificed to the altars of Baal Peor, and he groaned over the results of this worship in the following terms: "They have been initiated in the mysteries of Baal Peor; and they have become terrible like those things which they worshiped."

Moses superadded to his trenchant domestic precautions against the scourge of Baal Peor, a declaration of war against the Midianites, because the women of that people had drawn the sons of Israel to the worship of Baal Peor; and as a matter of fact, the latter was the principal focus of the disease. The Hebrews marched against Prince Midian, defeated him, killed all the men, and, after the accessory work of pillaging, brought back with the flocks the women and children. According to Numbers, chapter XXI, Moses became angry at the generals because they had spared the women; and indeed, it was scarcely worth while to have executed their own men, either diseased, or suspected of being so, and then to introduce into the Hebrew camp strange women who contained the virus. Moses had but one course to pursue, viz., to kill them also. It was cruel, but intensely logical, and the great legislator reasoned about it as follows:

"Are these not the women who have seduced the sons of Israel at the instigation of Balaam. and who have made you deny the Lord, your God, to make you sacrifice to Peor, from whom has come the scourge which has stricken our people?" The conclusion of this apostrophe is easily anticipated: "Therefore strangle the women who have known men carnally, but allow young virgins to live."

For the attentive reader of Mosaic history, it is needless to add that this command was duly executed.

It is difficult to believe that the following isolated verses of the Bible did not deal with syphilis, and we reproduce them with a word of comment:

"The Lord will render bald the vertex of the heads, the Lord will cause their hair to fall; instead of flowing hair it will be baldness." Is not alopecia syphilitica here distinctly pointed out as one of the inherent diseases of prostitution?

Again: "The appearance of their face speaks for them; they publish their sin, nor do they dissimulate."

"The Lord will cover thee with bad ulcers, from the soles of the feet to the head, upon the knees, on the delegs, and thou wilst not get well." We here see described a generalized syphilitic eruption, with pustules and ulcerations.

"Thy sores will increase by the will of God, as also those thou hast given to thy progeny; then there will be large and presevering sores, the worst and most lasting lesions." Heredity is here clearly indicated.

The Hebrews were as much exposed as other people of Asia to contract venereal diseases, inasmuch as they had the depraved habits of all the Asiatics. Without mentioning Sodom and Gomorrah, does not Moses forbid, in Leviticus, incest, bestiality, perverted sexual relations, and even legal prostitution, which is the best proof that these vices existed? In spite of the most severe punishments, the Hebrews gave themselves up to these shameless excesses; and as prostitution was forbidden in their camp, they visited strangers, particularly the Midianites and the daughters of Moab. These latter initiated them into the worship of Baal Peor, or *Belpheqor*, a sort of Priapus, whose temples were nothing but places of debauchery. These orgies in common were eminently favorable to the communication of syphilis; and, as a matter of fact, it was rapidly propagated, and known as the plague of Baal Peor, the epidemic which has just engaged our attention.

That this plague of Baal Peor was actual syphilis appears to be an almost irresistible conclusion. It was of venereal origin, and it could have been neither gonorrhœa nor balano-posthetis, nor genital herpes, nor even chancroid, although these lesions, with the exception of the last, have been likewise established as being rife at that period among the Jews. These latter ailments alone would certainly not have alarmed Moses to the pitch of adopting such extraordinary and radical measures; even if they had multiplied, as a result of excessive coitus and uncleanness. The disease of Baal Peor was something more intense, more violent, and more dangerous to the public health. Flavius Josephus says, that it was highly contagious, and was frequently transmitted to members of the same family. It was plainly a disease that constituted a grave social danger, which Moses endeavored to avoid by all possible means. It was not leprosy, for this learned and experienced legislator was too keen an observer of phenomena to make a gross error of diagnosis between diseases which already existed among his people, and the new epidemic. To read even the fragmentary detached accounts of its clinical symptoms furnished by the Bible, one might almost fancy them a summary of one of these monographs of the fifteenth century treating of the *morbus gallicus*.

The present speaker here records his belief that the epidemic of Baal Peor was frankly and purely syphilis. Not syphilis as it first stole upon this globe, to curse its human occupants perhaps forever, but a revival of it akin to that outbreak which in mediæval times lashed humanity with such fury and virulence at the siege of Naples. Nor, in all probability, was it syphilis as it exists to-day. All the recognizable features of the latter were no doubt there, but, fortunately for our patients, there was more of the pristine and unmitigated sting in the ancient form.

Buret also refers to the work of Captain Dabry, who translated the records of the Chinese Empire. Dabry found that syphilis was very common among the Chinese about 2700 years B. C. Their records then speak of it as an old disease, and one for which mercury was in general use. This Chinese record antedates the appearance of the disease in Egypt in the family of Pharaoh. We find also from this book that wherever prostitution existed syphilis was its companion. The former being as old as the human race, it seems very evident that the latter is also. But we find older records than the Mosaic or the Chinese. Its history has been written and may to-day be traced in monuments more lasting than written records. Wherever human remains have been found, even there the record may be traced. We know that to-day hereditary syphilis manifests itself in unmistakable evidences on the bones, especially in the form of exostoses about the superciliary arches, the frontal and parietal bones. These evidences, wherever found to-day, are pathognomonic of syphilis. Then if we find remains of the buried races of the past bearing these syphilitic exostoses, we may unhesitatingly affirm that the subject was the victim of hereditary syphilis. Buret has collected all the evidences bearing on this point, and we find syphilitic skulls and tibiæ have been excavated from the caves and dolmens of France, from the tombs of the Incas and the mounds of the mound builders of the United States, which bear unmistakable evidences of hereditary syphilis in the form of syphilitic nodes. Those who are in a position to know the value of these discoveries estimate their age at 60,000 years.

At the outset of this address, which has already I fear transcended in length your most reasonable and indulgent bounds, I incautiously purposed to say much of Moses in his capacity as a health officer and hygienist to the Jews. But this intention must now be abandoned, or postponed, which is perhaps a greater disappointment to me than to you. Suffice it for the present to say that of all the laws and precepts invented and instituted by Moses, the most brilliant were his rules of hygiene, applied to the enforcement of scrupulous cleanliness, and thereby to the limitation and extinction of disease.

If I may be permitted, after my very meager mention of the career of Moses as a hygienist and protector of his people against the ravages of disease, to estimate him for a moment in his guise as a man, as best befits a medical essay, and not in his character as a God-inspired liberator and ruler, I will add that the history of his life, derived from non-biblical, as well as biblical sources, irresistibly forces the reader's conviction of his grandly towering personality. As a military leader, he successfully braved, with his untrained warriors, a great King and his disciplined armies, and his rare administrative qualities enabled him later to mold the brutalized hordes of Egyptian slaves into a great nation. His calm self possession, impartiality, patience, perseverance, united with keen energy, promptness of action, and unfailing courage, constituted his extraordinary power over the hundreds of thousands who wished to know no law but their freshly acquired liberty. His self-prepared code of laws for their government, surpassed, for his time, these of a later period by Justinian and Napoleon, which were the work of jurists. The Rationalist school explained his alleged miracles as an advantage cleverly taken of his superior knowledge of natural phenomena. Voltaire, Tom Payne and Robert Ingersoll, trenchantly attacked him as the gigantic tramp of ancient times. There seems, however, but one conclusion. History discloses few, if any, men of his transcendent grandeur of genius, and despite every discount that the most hostile criticism has yet proposed, Moses remains, and will probably continue to remain, the most wonderful human product of all time.

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# ORIGINAL ARTICLES.

## POINTS IN THE ETIOLOGY AND CLINICAL HISTORY OF ERYSIPELAS.

Read in the Section on Practice of Medicine at the Forty-fourth Annual Meeting of the American Medical Association.

BY J. M. ANDERS, M.D.
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In discussing the predisposing causes of erysipelas, authors are greatly at variance as to the influence of age, sex. seasonal effect, etc., among other well recognized factors. It must be confessed, however, that no statistical inquiries have heretofore been instituted to show the exact effect exerted upon the disease by these supposed etiological elements.

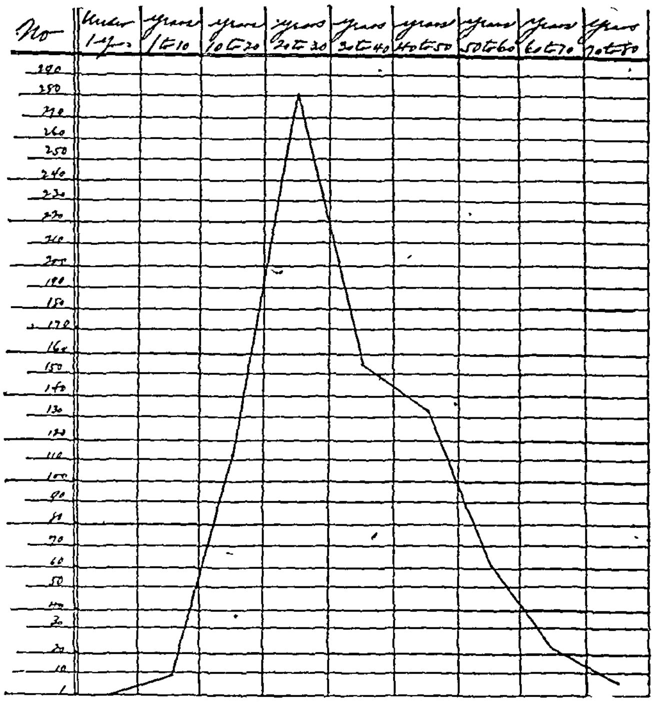
In a recent paper on "Seasonal Influence in Erysipelas, with Statistics," the writer has shown, by careful analysis of 2,010 cases collected from different sources, the relationship existing between the various seasons of the year and this affection; and he ventures to hope that he may be pardoned for calling attention briefly to some of the tabulated data contained in his former paper. Table (1) demonstrated clearly that the cases increase month by month in slightly varying ratio, from August to April, which latter month gives the greater number; and that there is a rapid decrease in the percentage of cases from April to August, the latter giving the smallest number. Again: "one-half of all the cases occurred during the months of February, March, April and May, and 15.9 per cent. during the month of April alone. It would appear that the winter and spring months, though more particularly the latter, influence the susceptibility to this disease." To account for this augmentation of cases during the winter and spring seasons no satisfactory explanation has been found. That it is not due to the increase in sickness in general which, as pointed out by M. J. Lewis, occurs in the spring season, may be readily shown. Erysipelas gives the greatest percentage of cases in April, whilst on the other hand, the greatest percentage in the aggregate of human illness, when computed month by month, occurs in March.

Researches were also instituted with a view to showing any relationship that might exist between the mean relative humidity, the mean barometer, and the appearance of cases of erysipelas.

Suffice it to re-state here a few of the deductions which may be found in my former paper relative to the rôle played by certain leading climate elements in the causation of this affection.

1. That a low barometer and mean relative humidity invariably correspond with the annual period in which the greatest number of cases occur, and the highest percentage of relative humidity with the months affording the fewest cases.
2. Among the meteorological factors, temperature has the least, and relative humidity the most, intimate connection with the disease.

TABLE I.—AGES.



| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Total for period of each decade. | 1 | 9 | 112 | 280 | 155 | 133 | 61 | 23 | 7 |

Representing 781 cases occurring from 1852 to 1892, inclusive.

Erysipelas is not to the same extent as chorea and rheumatism related to the seasonal variations in the totality of human illness.[1]

That the foregoing conclusions are based upon adequate data will be seen by a glance at the accompanying table. It however will also be observed that, for the months of September, October, November and December, the tracings do not maintain the same resemblance to one another as during the months from January to September, hence the effects of the various meteorological factors alone are inadequate to account for the steady rise, in the percentage of cases, throughout the cold months and more especially the quite considerable April augmentation. The interesting fact, however, remains proven, even though not explicable, that the disease is to a considerable extent dependent upon seasonal influence.

### PREDISPOSING INFLUENCE OF AGE.

The period of life at which persons are most liable to erysipelas has not, up to the present, been definitely determined, though there appears to be a pretty general impression among medical writers that it is most commonly met with in the young. Dr. J. A.

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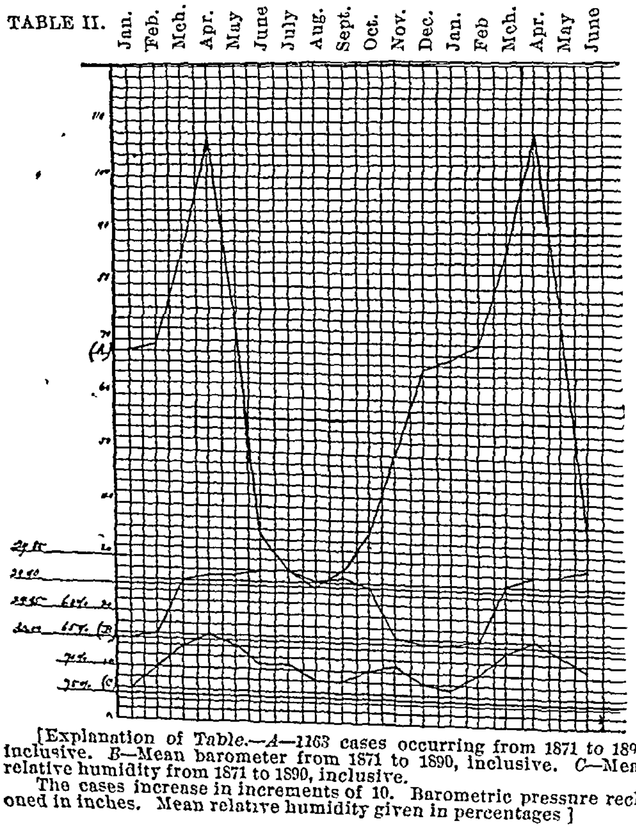
[1] For a more complete discussion of the points raised, the reader is referred to the original article—Proceedings of the American Climatological Association, for 1893.

Glaser (*Therapeutic Monatshefte*) reports 148 cases of erysipelas, in part from his private practice and in part from cases observed in the hospital. "These did not include any but his severe cases, and were scattered through fifteen or sixteen years. The patients varied in age from three-fourths of a year to seventy-five years. The largest part of them were between twenty and forty years old."

With a view to ascertaining with some approach to exactness the influence of age as a predisposing factor, I have obtained notes in 1,894 cases. Of these, 1,754 were acquired from the records of the various hospitals of Philadelphia and 143 from my private practice and the practice of others, who kindly furnished me with reports of their cases.[2]

In a small proportion of the cases only, the age of the patient was not given. The records of Blockley Hospital, Philadelphia, furnished 1,113 cases. It should be pointed out, relative to the latter statistics, that I can do nothing more at present than to give the average age of the patients. During the years from 1857 to 1870 inclusive, there were 234 cases whose average age was 45 years. In 879 cases which were admitted into Blockley Hospital during the years from 1870 to 1890 inclusive, the average age was 43 years. On the other hand, the average age of the cases derived from all other sources (781 in number) was 29 years. The average age of the 143 cases reported from private practice was 29.5 years. The explanation of this apparent great discrepancy in the ages is to be found in the fact that the average age of all patients admitted into Blockley Hospital is much greater than the average age of those admitted into other institutions or those met with in private practice. The patients cared for in the wards of Blockley Hospital come from the pauper element of the population in Philadelphia and elsewhere—an element composed in great part of middle-aged and old persons.

TABLE II.



[Explanation of Table.—*A*—1163 cases occurring from 1871 to 1890, inclusive. *B*—Mean barometer from 1871 to 1890, inclusive. *C*—Mean relative humidity from 1871 to 1890, inclusive.

The cases increase in increments of 10. Barometric pressure reckoned in inches. Mean relative humidity given in percentages.]

With this brief reference to the statistics obtained from Blockley I dismiss them, but desire to call attention to some interesting as well as practical points growing out of a further analysis of the 781 cases previously mentioned. In order to indicate the proportionate percentage of cases for the different periods of life the subjoined table has been carefully prepared.

Since this chart is quite simple and really self-explanatory, it will be unnecessary for me to do more than to call attention to a few facts, which are of sufficient importance to be emphasized. The tracing in the table represents the whole series of cases and increases in increments of ten. It will be observed that more than one-half of all cases occur before thirty years of age; that the period of greatest liability is from twenty to thirty years; that from thirty to fifty years the cases slowly decrease, and after fifty years quite rapidly. It should be noted especially that under ten years the disease is extremely, and between ten and twenty comparatively rare. The period of greatest frequency—from twenty to thirty years—furnishes 35.8 per cent. of the aggregate number of cases.

No attempt has been made to separate the idiopathic from the traumatic form of the complaint, and chiefly for the reason that in most instances the distinction was not noted in the records.

*The Effect of Sex.* The influence exerted by the sexes was also shown by the results of these investigations. The sex was noted in 1,767 cases. Of these, 1,219 were males and 548 females. It remains to be stated, however, in reference to the hospital statistics, that, in proportion to the whole number of cases of all complaints among the males as compared with those among the females, admitted into the institutions named, the preponderance of the former over the latter would not be so great as indicated by these figures. And yet, after making due allowance for all modifying conditions, the ratio would be as three to two in favor of the male sex. The same thing may be shown by considering separately the 143 cases gleaned from private practice, of which eighty-five were males and fifty-eight females. Of the 148 cases of erysipelas reported by Dr. J. A. Glaser (loc. cit.), fifty-one were women and ninety-seven men. That the disease is more frequent in the male than the female sex is thus definitely shown. This dictum may excite surprise in view of the fact that by most authors erysipelas is stated to be more common in women than in men.

The fact is rapidly becoming recognized by the profession that slight abrasions and fissures, either in the mucous membrane of the nose or in the skin of the face or the ear, as well as all forms of slight injuries, are liable to furnish a path of ingress to the specific poison. This point has also been corroborated by the results of our researches. In 643 cases which were examined with reference to this question, slight injuries and abrasions were noted in 113. Doubtless in many of these instances the examiner omitted to search for such lesions as we are considering. In most of the instances (here enumerated) the character of the changes was particularized as follows: slight contusion of forehead, in six cases; small wounds of forehead, six cases; slight scalp wounds, seven; trifling lesions of the ear, four; slight wounds of skin of nose, six; syphilitic erosions of nasal bones, four; wounds of eyebrow, three; wounds of eyelid, three; slight injuries to leg, three; slight wounds of cheek, wounds of thumb, two each; vaccination, excoriation of elbow, toe rubbed by boot, corn cut, caries of tooth, small sty, excoriation of foot, dog bite, one each.

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[2] I desire to express anew my grateful acknowledgment of the services kindly rendered, in the collection of these cases, by Drs. G. H. Crabtree, Wm. Osler, George Booth Miller, L. S. Bromley, Weiser and Litchfield and by numerous professional friends for cases from their private practice.

It is interesting to note that, out of a total of 301 histories examined for me, by Dr. M. Booth Miller, acute coryza preceded the attack in thirteen instances. Doubtless in these, slight lesions of the Schneiderian mucous membrane favored specific infection.

Testimony confirmatory of the well known fact that certain chronic diseases, such as chronic Bright's, phthisis etc., increase the susceptibility to the complaint, was also brought to light by these inquiries.

The chronic affections in the course of which erysipelas occurs most frequently are shown by the following analysis of 1,665 cases, viz: in the course of chronic leg ulcers, sixty-seven occurred; in chronic pulmonary tuberculosis and chronic nephritis, fifteen each; in rheumatism, fourteen; in organic heart disease, ten; in urethral stricture, six; in syphilis and synovitis, five each; in asthma, chronic pleurisy and chronic alcoholism, four each; in bone necrosis, malaria, locomotor ataxia, senile debility and puerperal state, three each; in typhoid fever and sciatica, two each. Instances in which single cases occurred secondary to other chronic affections were numerous, but need not be detailed here. According to these figures the proportion of examples in which erysipelas is secondary to chronic diseases is not formidable, the percentage being 7.8, if we include those diseases that furnish but a single case of erysipelas.

Individual predisposition to the complaint was shown in some instances, though not as frequently as some writers would have us believe. Of 450 instances previous attacks were noted in thirty-nine, or in 8.06 per cent. One patient had had seven previous attacks; another, four; several, one, two and three attacks respectively. Family predisposition was noted in four instances. One of these patients stated that he had had many previous attacks and that his father and two brothers were also very susceptible.

### POINTS IN THE CLINICAL HISTORY.

As to the chief seat of the local manifestations exact figures cannot be given since, in numerous instances, no mention of the locality was made; and yet the data obtained on this head were full of interest. The notes of the cases examined gave the result here stated. The locality was ascertained in 712 cases; of which 517 or 72.6 per cent. were facial; 127 or 17.8 per cent. affected the leg and foot; seventeen cases or 2.3 per cent., the arm; eight cases or 1.1 per cent. the hand; while five cases or .7 per cent. implicated the scrotum. The cases in which the inflammation occupied portions of the body other than the head could not all be classified as idiopathic. For instance, as before stated, sixty-seven cases were secondary to leg ulcers. Here the ulcers served as a gate of entrance for the specific virus. After a careful elimination of cases in which there seemed to be any doubt, we have 586 as the aggregate number belonging to the idiopathic variety. Of these, 517 or 88.2 per cent. were facial; 50 or 8.5 per cent. occurred on the leg and foot; ten or 1.7 per cent. on the arm; five or .85 per cent. on the hand; and four or .68 per cent. on the scrotum.

It is seen that nearly all cases of idiopathic erysipelas attack the face—a fact previously well known. The next most favorite seat of this disease is the leg —a fact not heretofore demonstrated.

*Course and Duration.*—Both the clinical course and duration of erysipelas were found to be quite variable; and this was owing largely to the presence of complications (which are numerous), the previous condition of the patient, age, etc. I regret that the limits of the present article will not permit me to discuss the various complications that were noted as occurring in this complaint. The average duration of the affection was computed in 1,880 cases and found to be (including relapses) 25.13 days. At any period of life, according to these observations, the stay in a hospital, or the duration of a case in private practice, was lengthened almost indefinitely when the patient had been previously in an enfeebled condition on account of chronic disease, and when complications existed. The average course was found to be much less in uncomplicated cases occurring in persons under 40 years, which is the time of life corresponding with a preponderating proportion of cases, viz., about fourteen days.

These results point strongly to the important practical facts. that erysipelas in a typical form is a self-limited disease; that the length of the attack is greatly influenced by the age of the patient *per se*, its average duration in persons of 50 years or over being considerably longer than in younger subjects. Sex has no influence in this direction.

That relapses are rather common in this disease is a fact long since learned by the profession. Among 476 cases recorded, relapses occurred in 54, or 11.3 per cent. It is interesting to note that in one patient five relapses occurred; in two others, four; and in three patients, three. First and second relapses were still more common. Single relapses were frequently observed, in typical cases, in otherwise healthy subjects. On the other hand, multiple relapses occurred most frequently in persons whose general health had been previously impaired.

DR. HOBART A. HARE, Philadelphia—There is always danger in averages on cases; you can not get a correct idea of the average age at which a disease is apt to attack a person by looking over a column of figures, and if you make a mathematical average you may get an average which is misleading. A few years ago I looked over some statistics and found the average age was something like forty years, but by a careful examination of tables I found that the disease affected persons early in life and very late in life; forty years was not the most common, although the average age; seventy and ten added together gave me an average of forty, which was misleading. I appreciate the fact that Dr. Anders has eliminated as far as possible the dangers which are always present in making the averages in statistics.

My experience in St. Agnes and Jefferson Hospitals has convinced me of the truth of the statement made by Dr. Anders in regard to the frequency with which the erysipelas we are apt to call typical, depends upon lesions of the nasal or conjunctival membrane. I remember a few years ago in St. Agnes Hospital in convalescent cases of typhoid who had erysipelas, there were always marked complications of the face and nose. The stuffing up of the nasal cavities with dried secretions had been present to a great extent. In the mucous membrane of the nose we have the means of entrance of the microörganisms, the bacilli which first come with the destruction of the mucous membrane, with the pus. Unlike many diseases which are dependent upon the streptococcus, introducing itself in low vitality which decreases normal resistance and gives opportunity for the streptococci to produce the characteristic lesion.

I have also been much interested in what Dr. Anders said in regard to the frequency with which the disease attacks males instead of females. Most tables will show that acute inflammatory disease does not affect the male more than the female. The reason is the male is so much more exposed to traumatism, injuries which will allow the entrance of the streptocccus, than the female, but if women had the same opportunities for receiving injuries we might find them suffering from the disease even more frequently than men.

**Dr. J. M. Anders**, Philadelphia, in closing the discussion, said: One of the points he raised should be answered. He stated that in adding together all the cases year by year and dividing by the total number of cases and in that way obtaining the average age of persons affected would in a great many cases give a misleading result, especially where the disease was most frequent at either extreme of life. If Dr. Hare had followed me closely he would have known that I added the cases together and got the total number, and I also gave the period of greatest frequency and the time of life at which cases were the most numerous, in that way overcoming his objection to the manner of investigating the subject. All the other points were well taken.

# THE DETERMINATION AND SIGNIFICANCE OF CARBOHYDRATES IN THE URINE.

Read before the Section on Practice of Medicine at the Forty-fourth Annual Meeting of the American Medical Association.

BY CHARLES W. PURDY, M.D.
CHICAGO.

Carbohydrates are so called because they are compounds of carbon, hydrogen, and oxygen; the last two elements being present in the proportion in which they occur in water. The carbohydrates met with in the urine are chiefly glucose, levulose, lactose and inosite. They resemble one another in their chemical composition, in all containing six atoms of carbon or a multiple thereof. They also resemble one another in their chemical characteristics; being neutral in reaction, not prone to enter into combinations, and with the exception of inosite, they all possess a strong rotary power over polarized light.

The chief clinical interest with regard to the presence of carbo-hydrates in the urine at present belongs to grape sugar; some knowledge of the other carbohydrates met with in the urine is necessary for differential purposes in testing; as well in a few cases for their clinical significance, but since the latter are for the most part of comparatively minor importance, the greater part of this paper will be devoted to the consideration of glycosuria.

### GLYCOSURIA.

Grape sugar in its pure form crystallizes in rhombic tablets; is soluble in its own weight of water, and gives a dextro-rotary power over polarized lights of + 57.60. Its solutions become brown when boiled with liquor potassæ, but with picric acid a deep mahogany red. In the presence of strongly alkaline solutions, it reduces cupric salts, precipitating red oxide of copper; it also reduces bismuth salts with resulting black precipitate. Faintly alkaline solutions of grape sugar colored blue by indigo, when boiled, exhibit a beautiful color, reaction beginning with violet and ending with yellow. Lastly, with sodium acetate solution it reduces phenyl-hydrazin hydrochlorate to phenyl-glucosazone, forming highly characteristic and beautiful golden yellow ascicular crystals.

Grape sugar exists in minute quantity in normal blood, varying chiefly with the functional activity of the liver. In some abnormal states of the system, the amount of sugar in the blood becomes markedly increased, reaching its maximum, about one-tenth of one per cent., in the more pronounced diabetic conditions.

It has long been a disputed question if sugar be present in normal urine as first affirmed by Brucke. The investigations of Segeen for some time seemed to negative such assumption; but quite recently this question has received emphatic confirmation through the researches of Wedenski. Taking advantage of Baumann's discovery, that benzoyl chloride forms insoluble compounds with carbohydrates, Wedenski succeeded in separating from the precipitate thus formed in normal urine a body which gave all the reactions of grape sugar; so that these investigations must be considered conclusive. Although therefore sugar exists in normal urine as above shown, the quantity is so exceedingly minute that it is unrecognizable by our ordinary methods of testing, and consequently its significance is physiological rather than clinical, and need not further detain us.

### CLINICAL SIGNIFICANCE.

Glycosuria may appear as a temporary condition in the course of a number of diseases, as cholera, intermittent fever, scarlatina, gout, cerebro-spinal meningitis, diseases of the lungs, liver and brain; especially if involving the fourth ventricle. It must be admitted, however, that glycosuria is comparatively rare in such cases, and when present the quantity of sugar in the urine is small.

Sugar appears in the urine after the administration of phloridzin, and until recently we have been taught that temporary glycosuria may be induced by the administration of certain drugs, as strychnia, curare, chloroform, ether, and carbon monoxide. Our improved methods of testing, however, have conclusively shown that the substance in the urine in these cases which reduces the copper test is glycuronic acid and not sugar.

Temporary glycosuria may be induced by cutting or puncturing various parts of the nervous system, by wounds of the liver by means of needles; by injecting acids or stimulants into the hepatic veins, and by violent irritation of some sensory nerve. It is more than probable that in all such cases the glycosuria is brought about by interference with the center for the vasomotor nerves of the liver. Inasmuch as in all these cases the glycosuria is slight, and of only temporary duration, the interest attached to temporary glycosuria of this order falls more within the province of the experimental physiologist than that of the clinician.

Comparatively recent observations have shown that complete extirpation of the pancreas in dogs gives rise to permanent diabetes, resulting in the death of these animals. These observations are of value in demonstrating that the pancreas, in addition to secreting the pancreatic juice, plays an important rôle in the process of general metabolism.

In working out the significance of the above observations the author hopes soon to lay before the profession the results of some experiments he is conducting with the view of determining the possible influence that injections of healthy pancreatic extract may exert over genuine diabetes.

Glycosuria of pronounced and persistent form belongs to the province of diabetes mellitis, and may always be regarded as symptomatic of grave defect, either in the brain, liver or pancreas. In young subjects the disease is pretty uniformly progressive; and that towards a fatal termination in from a few months to four or five years. This is notably the case in patients under twenty years of age. In the middle period of life, the disease is somewhat less severe, and slightly less fatal. After fifty years of age the disease is often mild and amenable to careful dietetic management.

Persistent glycosuria is the most constant and certain of all the symptoms of diabetes mellitus, being in fact often the only symptom of the disease, and herein lies its great clinical importance. It is therefore of the utmost importance to be able to readily recognize the presence of sugar in the urine, since by the habit of routine search very serious forms of disease are often unexpectedly revealed, and in the course of clinical investigations, diagnostication of the most positive nature often hinges upon this point alone.

### DETECTION OF SUGAR.

The tests for sugar in the urine at present are numerous, but few, if any, of them, however, can be said to be altogether satisfactory. If the quantity of sugar be large, little difficulty will be encountered in its detection by the most ordinary tests in use. If on the other hand the quantity be small, say one-half of one per cent., or less, most of the ordinary tests for sugar in the urine behave with uncertainty, and moreover, many of them absolutely fail to give trustworthy information.

Preliminary to submitting the suspected urine to chemical tests for sugar, the physical characteristics of the urine should be noted, more especially the color and specific gravity. As a rule if the urine contains a marked amount of sugar, the color is light and of a greenish hue, and the specific gravity is decidedly high—1,030 or above. The most popular method of searching for sugar in the urine is by means of the copper tests. These all depend upon the fact already noted, that in strongly alkaline solutions grape sugar reduces the copper salts to lower grades of oxidation, precipitating the suboxide in the form of a yellow, or yellowish opaque deposit.

### TROMMER'S TEST.

This test may be most conveniently performed, as follows: About two drachms of urine in an ordinary test tube is first treated with sufficient cupric sulphate solution to render the urine a light green color, after which an equal volume of liquor potassæ is added. At first a blue precipitate of hydrated cupric protoxide results which dissolves upon agitation, forming a beautiful clear blue solution. If allowed to stand a half hour or so, reduction gradually takes place, especially if much sugar is present, resulting in precipitation of yellow, or yellowish red suboxide of copper. If instead of standing half an hour, gentle heat be applied, this test becomes more delicate, and moreover reduction occurs at once, as follows: First, a yellowish opacity appears, due to the formation of hydrated suboxide of copper, and upon further boiling it loses its water and forms a brick red precipitate of anhydrous cupric suboxide.

The test is open to two objections: First, if it be not submitted to boiling it is not very sensitive and will only detect sugar when present in considerable quantity. Second, if boiled, more especially very long, the test is rendered over sensitive so that reaction may occur with substances in the urine other than sugar for the following reasons: The power of reducing cupric oxide in alkaline solutions is possessed to a feeble degree by a number of substances in both normal and abnormal urine, such as uric acid, creatinin, mucus, indican, hippuric acid, hypoxanthin, tannin, carbolic acid, etc. Now, in Trommer's test the quantity of urine submitted to the copper solution is relatively large, which greatly increases the chances of reduction by non-saccharin agents.

### FEHLING'S TEST

has perhaps enjoyed the greatest popularity of all the copper tests for clinical use. The great objection to Fehling's solution is its well known tendency to deteriorate upon keeping, which is chiefly due to the instability of its contained sodium tartrate. It will be remembered that when an alkali is added to a solution of cupric sulphate an abundant precipitate of hydrated cupric protoxide is thrown down. In order to hold this in solution some vegetable product must be added which will not reduce the cupric protoxide. Unfortunately in Fehling's solution a very unstable salt, the sodium tartrate, was chosen for the above purpose. Schmiedeberg suggested an improvement in the formula which adds greatly to the stability of the solution, viz., the substitution of pure mannite for the sodium tartrate. Fehling's test is also now prepared dry, in the form of two compressed tablets, or pellets, which are dissolved forming the solution as per regular formula at the time of application of the test. In the author's experience these pellets are even more unstable than the old form of Fehling's solution and are therefore not recommended.

### HAINES' TEST.

On the whole the most excellent form of the copper test for sugar qualitatively is that devised by Professor Walter Haines of Chicago. The preparation of this test is simple in the extreme, as follows: Thirty grains of sulphate of copper are dissolved in half an ounce of distilled water, to which half an ounce of glycerin is added, and the whole is then mixed with five ounces of liquor potassæ. In testing with this solution a drachm is gently boiled and the urine added drop by drop until six or eight drops are added but not more. If sugar be present a copious yellow or yellowish red precipitate is thrown down consisting of the usual anhydrous suboxide of copper.

The advantage of Prof. Haines' test for qualitative purposes over other forms of the copper test are: First, it is entirely stable, which enables it to be kept on hand indefinitely. Second, it is simple in construction; its components being at hand in all ordinary drug stores. Third, the relatively small quantity of urine employed in testing—*six or eight* drops only—renders it least likely to mislead one through reducing agents in the urine other than sugar. Fourth, its delicacy is at least equal to that of any other form of the copper test.

With regard to the copper tests in general, it is important to bear in mind that boiling should not be too long continued, otherwise slight reduction is liable to occur with urine when free from sugar; about half a minute should constitute the usual limit of time. Lastly, it should be remembered that *strongly alkaline solutions are apt to precipitate* from the urine the earthy phosphates of calcium and magnesium in the form of a grayish cloud which should not be taken for the cupric reduction.

### FERMENTATION TEST.

This test depends upon the fact that grape sugar is decomposed in the fermentation set up by yeast; yielding alcohol, carbon dioxide, succinic acid, and a number of other products with resulting decrease in the specific gravity of the urine. For qualitative purposes the following method of applying the fermentation test will be found best. Fill an ordinary test tube half full of mercury and the remaining half with urine to be tested, and introduce into the urine a small piece of German yeast. Next close the mouth of the test tube with the thumb and invert over a small vessel of mercury and set aside in a warm room for several hours. If sugar be present fermentation proceeds at once, liberating the carbonic acid gas, which collects in the upper end of the tube, displacing the urine and mercury more or less according to the quantity of sugar present.

This test may be considered trustworthy for the detection of *considerable quantities* of sugar; but the capacity of the urine itself for absorbing carbonic gas renders this test uncertain in detecting sugar if present in quantities less than one per cent. This, with the fact that it takes several hours to make this test renders it inapplicable for routine work.

### BISMUTH TEST.

Sugar possesses, as already noted, the power of reducing bismuth salts with resulting black precipitate, and upon this fact Bottger first suggested the bismuth test. Traces of sulphur which are often present in the urine, cause the same reaction with this test as does sugar, and therefore this test cannot be considered trustworthy unless performed by Brucke's method, which is *too tedious* for practical clinical work.

### PHENYLHYDRAZIN TEST.

This test suggested by Fischer, depends upon the power possessed by phenylhydrazin in forming with grape sugar a highly characteristic crystalline compound termed *phenylglucosazone*. This test may be practiced as follows: *Two parts of phenylhydrazin* hydrochlorate—as much as will lie upon a dime piece—and three parts of sodium acetate are mixed together with two drachms of the suspected urine in a test tube and a little water added. The whole is brought to the boiling point and gently boiled for about half a minute, and then set aside and allowed to cool. If sugar be present, even in a minute quantity. there forms a yellowish crystalline deposit, which may appear amorphous to the naked eye. but which when examined under the microscope is seen to contain yellow needle shaped crystals, detached or *arranged in star-shaped clusters*.

This test gives probably the most trustworthy results of all known tests of sugar in the urine, equally reliable with every variety of morbid urine. The phenylhydrazin *test gives no reaction with uric acid, urates, creatinin, mucus or normal urines*; nor with such bodies occasionally present in the urine as oxybutric acid, urochloralic acid, uroxanthic acid, tannin, morphin, salicylic acid, carbolic acid, etc.

Among the other tests more or less used for detecting sugar in the urine may be mentioned picric acid, brought forward by Johnson, of London; acetate of lead and ammonia (Rubner); alpha, napthol and thymol (Molisch); indigo carmin (Mulder); bichloride of tin (Maumene); chromic acid (Hunefeld); sulphuric acid (Runge) and polarization.

None of these tests possess special advantages; of those considered, on the contrary, most of them are greatly inferior.

In searching for sugar in the urine, a test should be selected for routine work which is simple in application, reasonably trustworthy, and perfectly stable, so that it may be kept on hand for use when required. In all these respects Haines' test is very desirable.

The following suggestions may aid the observer in avoiding error and reaching accurate results. First, before testing *always thoroughly cleanse all utensils* to be employed in the analysis. Second, in using the copper tests always employ at first a minimal amount of the suspected urine, gradually increasing until reaction be obtained or the stated limit be *reached. This method greatly decreases the risk of reduction by other substances than sugar in the* urine, and moreover it gives a rough idea of the quantity of sugar when present. Third, if any doubt arise as to the presence of sugar in the suspected urine, after the application of the routine test, an appeal should be made to one or more of the others mentioned. For this purpose the phenylhydrazin test is desirable above all others, both because of its exceeding delicacy, and its present known property of reacting with few other substances than grape sugar.

### DETERMINATION OF SUGAR.

Having detected the presence of sugar in the urine, it is in all cases highly important to determine its quantity, for the following reasons: Such knowledge furnishes the truest evidence of the grade or severity of the disease; it furnishes the most solid basis upon which to construct the prognosis and it gives the *most trustworthy* evidence as to the results of treatment.

### THE FERMENTATION METHOD

is best conducted by Robert's system of observing the differential density of the urine before and after complete fermentation. The objections to this method are that it takes twenty-four hours to reach results which are by no means accurate when attained, which may be proved by making a series of observations upon the same urine. The fermentation saccharometer devised by Einhorn is even less accurate than Robert's method. These instruments are intended to collect and measure the carbonic acid gas involved in fermentation, but the urine itself absorbs a very considerable volume of the carbonic acid gas of which the instrument takes no account.

### TITRATION METHOD.

This has hitherto been most practiced with Fehling's solution. The principle of the process depends upon the fact that in reduction of cupric oxide in solutions of definite strength by grape sugar, the blue coloration disappears by the addition of a definite quantity of the sugar.

The chief drawback with this test is the fact that when the blue color fades, the yellow suboxide of copper takes its place, and so obscures the color change that it is almost impossible to determine the precise point of complete reduction. This can only be approximately remedied by repeated boiling and standing after successive additions of a few drops of the urine, and it has already been stated that prolonged boiling impairs this test. In addition to this, Fehling's solution is so unstable that it must be freshly prepared to be depended upon. It will therefore be found if all precautions be observed that the determination of sugar by this test is tedious and difficult, and calls for an accuracy of manipulation which few but experts possess. It therefore seems amazing that by common consent this test has been so uniformly recommended to meet the requirements of the physician in every day clinical work.

In view of the fact that quantitative testing to sugar in the urine has never been rendered satisfactory for the requirements of the clinician, the writer has after some labor and experimenting constructed a formula which will overcome the objections to the present methods, and over two years' experience in its daily use warrants the claim that it is well adapted to the requirements of the physician and student, for the following reasons: It enables one to determine accurately the quantity of sugar in a given sample of urine in from two to five minutes; the test solution is stable and will if properly prepared keep for months without impairment. It is easy of application, the apparatus required being of the simplest order. It may be made available either for exact or approximate estimation; in the latter case more simple and rapidly than in testing qualitatively for albumen.

The formula for the test is as follows:

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The principle upon which the application of this test depends is the fact that a definite quantity of the solution is reduced upon boiling by a definite quantity of grape sugar, causing complete disappearance of the blue color, and leaving at the exact point of reduction a brightly transparent and colorless fluid. Thus ten drachms of this solution are reduced upon boiling by exactly one-third grain of grape sugar.

The test is best conducted as follows: Have on hand an ordinary retort stand, a graduated minim burette, a four-ounce glass flask and a spirit lamp. Proceed by measuring ten drachms of the test solution into the glass flask and dilute with about two volumes of distilled water. Place the lighted spirit lamp beneath the flask and while the solution is heating fill the burette with the urine to be tested and screw the burette into the arm of the stand in such a position that the urine will drop into the test solution when the stop cock is turned. When the test solution begins to boil, discharge the urine from the burette, slowly, drop by drop, into the boiling test solution until the blue color completely vanishes and leaves the solution transparent and colorless. The quantity of urine it takes to discharge the blue color represents just one-third grain of sugar. Divide 480 (the number of minims per ounce) by the number it took to discharge the blue color and the product is the number of one-third grains per ounce, which divided by three gives the number of grains per ounce. Thus if sixteen minims of urine reduce the test there are thirty third grains, or ten grains per ounce; $\frac{480}{16} = \frac{30}{3} =$ ten grains. If it be desired to know the percentage amount of sugar, simply divide the number of grains per ounce by 4.8.

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Grape sugar possesses a right rotary power over polarized light, and upon this fact has been based a method of quantitative testing for sugar by the polariscope. The more elaborately constructed instruments for this purpose are those of Lippich, Mitsturlich, Soliel, Laurent, Wild and Von Fleischel. but the expense of such instruments, and the dexterity required in using them, must always prevent their general use. Ultzmann has recently devised a polarizing saccharimeter which is comparatively simple, both in its construction and manipulation; and the entire apparatus can be had for a comparatively small cost. From considerable experience in the use of the instruments, the writer finds that they are not to be depended upon for determining sugar in the urine if present in quantities less than one and a half or two per cent. It should always be borne in mind that in diabetes the urine is apt to contain laevulose and oxybutric acid, both of which rotate polarized light to the left, rendering this test subject to occasional errors from these sources.

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Fruit sugar—laevulose—has been found in the urine of persons whose symptoms correspond closely with those of diabetes. In such cases the laevulose may be associated with grape sugar, or it may appear alone, but usually the former is the case.

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Aside from the fact that laevulose is sometimes found in diabetic conditions, either alone or in association with grape sugar, little else is known of its clinical significance. It has been stated that the excessive ingestion of cane sugar, as well as sugars of certain kinds of fruits, may cause the appearance of laevulose in the urine, more especially in conditions of disturbed digestion. This, however, is rather conjectural than the result of observation, although cane sugar is converted in the intestines into glucose and laevulose.

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# THE COMPLICATIONS OF CHRONIC NEPHRITIS.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY WM. C. DABNEY, M.D.
PROFESSOR OF PRACTICE OF MEDICINE, ETC., UNIVERSITY OF VIRGINIA.

It is not an easy matter to draw a fast and sharp line between the *symptoms* of chronic nephritis and the *complications* which occur with greater or less frequency in this disease. Indeed, the symptoms of the different forms of chronic inflammation of the kidneys may become so serious as to constitute complications of the gravest character and necessitating the most careful management.

I shall not attempt in the present article to study all the complications of chronic Bright's disease, nor shall I attempt to consider any of them in very great detail, but I wish to bring to your attention some of those which seem to me most important, either from the frequency of their occurrence or the acid gas involved in fermentation, but the urine itself absorbs a very considerable volume of the carbonic acid gas of which the instrument takes no account.

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## THE COMPLICATIONS OF CHRONIC NEPHRITIS.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

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It is not an easy matter to draw a fast and sharp line between the *symptoms* of chronic nephritis and the *complications* which occur with greater or less frequency in this disease. Indeed, the symptoms of the different forms of chronic inflammation of the kidneys may become so serious as to constitute complications of the gravest character and necessitating the most careful management.

I shall not attempt in the present article to study all the complications of chronic Bright's disease, nor shall I attempt to consider any of them in very great detail, but I wish to bring to your attention some of those which seem to me most important, either from the frequency of their occurrence or the gravity of the symptoms to which they give rise. I propose to study them under the following headings:

1. The cardiac and vascular complications.
2. Those connected with the nervous system.
3. The respiratory.

*The Cardiac and Vascular Complications.*—So far as the heart is concerned I shall limit my remarks to hypertrophy of the organ, and shall not consider the connection between valvular diseases and chronic renal inflammation.

With respect to the *frequency* of hypertrophy of the heart in Bright's disease the investigations of Formad have given us positive and clear information. In 300 cases of chronic Bright's disease examined by him, hypertrophy of the heart was found in 62 per cent. But while this was the per cent. of all cases, there was a very striking difference in the frequency of cardiac hypertrophy in the chronic *parenchymatous* form on the one hand, and the *interstitial* on the other. Thus of 150 cases which he himself examined, "hypertrophy of the heart in connection with the parenchymatous form of nephritis occurred in 54 per cent. of the cases, and in the interstitial nephritis in 92 per cent." Of 150 cases taken from the records of the Philadelphia Hospital, "hypertrophy of the heart in connection with parenchymatous nephritis occurred in 56 per cent. of all cases, and in the interstitial nephritis in 60 per cent."

The vascular changes—that is, the changes in the aorta and larger blood vessels—were present also in a large proportion of Formad's cases—52 per cent.—but endarteritis and peradenitis of the renal blood vessels was rarely found except in connection with interstitial nephritis, where it was observed in 90 per cent. It is a matter of interest to determine if possible what relation the cardiac and vascular changes bear to the renal disease, but I need not say that there is still a wide diversity of opinion on this point.

There are three possible explanations of the connection between the two: 1, that the kidney disease *precedes* the heart and arterial trouble and stands in a causative relation to it; 2, that the two are caused by the same agent and progress simultaneously; and 3, that the disease of the vessels is primary and the renal affection secondary thereto.

I do not propose to go into a consideration of the general causes of endarteritis and atheroma or the physiology of the kidney, but there are several points of practical importance in this connection, and about which I believe there is no difference of opinion among those who have studied these subjects carefully. Briefly stated these points are as follows:

1. Various substances are found in the body or are taken into the body from without which are capable of causing inflammation or degeneration of the tissues with which they come in contact.

2. These substances enter the blood vessels and are carried by these vessels to different parts of the body, where they are or should be eliminated.

3. The organs whose duty it is to eliminate these substances are the kidneys, the bowels and liver and the skin. (Elimination may take place from other parts also, but it is of little practical importance.)

It follows from these general propositions that the noxious matters which cause inflammation of the parts with which they come in contact may be present in the blood in excessive quantity, either from increased formation or from defective elimination, and it would reasonably be inferred also that the most frequent seats of such inflammation would be in the heart and blood vessels and in the eliminative organs, the kidneys, liver, etc.

Now how far do the facts accord with these theoretical considerations? We know that certain toxic matters, such for example as the poison of scarlet fever, are apt to cause inflammation of the lining membrane of the blood vessels and also of the kidneys.

Another common illustration is found in the endarteritis and renal changes which occur in gout.

In the case of scarlet fever we have a poison which is entirely foreign to the body and is never found in it in health; in the case of gout the toxic substance is found normally in the body, but is present in this disease in great excess. In the one case—scarlet fever—the poison is not constantly found and is soon eliminated so that its action ceases, while in the case of gout the toxic substance is constantly found and the irritation resulting from it is more prolonged, and leads to changes of a far more lasting character. There is a further difference, however, in the two cases. The poison of scarlet fever, so far as the kidneys are concerned, acts chiefly on the cells lining the tubules, while the gouty poison acts but little on these cells, but causes inflammation and thickening of the walls of the renal blood vessels. Formad, in the paper to which I have already referred and which is such a mine of information, calls attention to the slight degenerative changes in the renal epithelium in cases of interstitial nephritis, "red granular" or "gouty" kidneys. Gaucher states that the large white kidney (one stage of parenchymatous nephritis), is due to excessive formation in the body or the introduction from without of extractive matters, and he says it may be caused by the excessive use of beef extracts.

In all cases of parenchymatous nephritis of *serious character* there is renal inadequacy; or in other words, certain substances which should be removed by the kidneys are retained in the blood; and this renal inadequacy leads to increased arterial tension (Musser, *Times and Register*, Philadelphia, October 17, 1890; also Bradstreet on The Pulse, p. 156). Nor is the renal inadequacy confined to *parenchymatous* nephritis. In interstitial nephritis it is very marked, but it is probably of late occurrence in these cases, and is due rather to a diminution in the extent of excretory surface than to a change in the excretory cells themselves. It is a well known fact, furthermore, that hypertrophy of the heart does not occur to any appreciable degree in acute nephritis; nor is it marked in the early stages of the chronic parenchymatous disease. As a rule, however, the cardiac and vascular changes become more and more marked in proportion to the duration of the affection. But in many cases, as Formad's examinations show, it is slight at the time of death. The following cases, which have been under my immediate observation for a number of years, will illustrate this point:

Mrs. R. J. M. had a severe attack of puerperal eclampsia in 1880, from which she recovered in due time; since then she has given birth to six children, but her urine has never been free from albumen, and hyaline and granular casts can often be found in it; she has some dropsy occasionally also. During each of her pregnancies the condition of her kidneys has been such as to cause me great anxiety, but she has never had a recurrence of the eclampsia.

Now in this case there has never been any evidence of cardiac hypertrophy or of vascular change. In another case which terminated fatally during the past winter there were the gouty symptoms but no enlargement of the heart:

Miss G. came under my care in August, 1890. Her age was 36. She consulted me for some attacks of nausea and headache; there was no dropsy, and my attention would probably not have been called to the condition of her kidneys but for the singularly dark color of the skin, to which I have called attention elsewhere as a frequent symptom of chronic Bright's disease. On examination of this lady's urine I found albumen in large amount and considerable numbers of hyaline and granular casts. The symptoms continued with occasional periods of improvement till her death during the past winter, but at no time was there any perceptible enlargement of her heart.

The frequency and extent of the cardiac and vascular changes in chronic parenchymatous nephritis probably depend more on the nature of the toxic substance than on the amount in the blood at any one time, or even on the length of time that the poison is circulating in the blood. This explains the extreme frequency of such complications in connection with the "gouty kidney."

But it would not be in accord with the facts for us to adopt an exclusive view as to the connection between the cardiac and vascular changes and the renal disease. It seems to me then that we are justified in adopting the following views:

1. Cardiac and vascular changes are far more common in interstitial nephritis than in the parenchymatous form of the disease. In these cases the renal, cardiac and vascular changes go on simultaneously and are due to the same cause, and the cardiac and vascular changes are not the consequence of the renal disease, though they may be aggravated by it. It is an interesting fact that this form of nephritis occurs especially in gouty and rheumatic persons who are liable to inflammatory disturbances about the ligaments, etc., and that in such cases also endarteritis and atheroma also occur, being observed chiefly in the connective tissue coat of the arteries.

2. Cardiac and vascular changes also occur in connection with chronic parenchymatous nephritis, but they are much less frequent than in the interstitial form, and are probably *secondary* to the renal disease and caused by the retention of toxic matters in consequence of the renal inadequacy.

Directly connected with the cardiac and vascular complications are the *hemorrhages* which are of common occurrence in cases of chronic nephritis, and may lead to the most serious consequences.

Saverny (Thèse de Paris, 1890), has called attention to hemorrhages from the nose, which are of comparatively common occurrence in interstitial nephritis, and occur in the late stage. They are plainly due to the cardiac hypertrophy and the changes in the vascular walls.

Of far more importance and unfortunately of comparative frequency, are cerebral hemorrhages. Like bleeding from the nose, cerebral hemorrhage is far more common in the interstitial than in parenchymatous nephritis, and usually occurs late in the disease. Of the 150 cases tabulated by Formad from autopsies made in private practice or for the coroner, cerebral hemorrhage caused death in 16 per cent. Of the 150 cases taken from the wards of the Philadelphia Hospital, only 7 per cent. died from apoplexy.

*Complications Connected with the Nervous System.—Apoplexy*, while it is perhaps the most common complication of chronic Bright's disease, has already been briefly considered in connection with the cardiac and vascular changes, and I shall not have time to consider it more in detail at present. There are two or three other nervous complications, however, to which I wish to call attention as briefly as possible.

One of these is *sweating*. This symptom or complication might perhaps be classed with the cutaneous disturbances, but it is so clearly of nervous origin that I shall insert it here. Sweating is so common that it is apt to be overlooked or to have but little attention paid to it, but I have seen a most interesting case of *local* sweating in the course of chronic interstitial nephritis which was sufficient in degree to occasion great discomfort. The patient was a well known member of the medical profession and had been a sufferer from sclerotic Bright's disease for several years when profuse sweating of the face and head came on. The attacks occurred chiefly at night or in the early hours of the morning, and the amount of sweat secreted was very great, but it was confined exclusively to the head. The disturbance persisted with occasional intermissions till his death, about eight months after it first appeared.

Another nervous complication of Bright's disease to which considerable attention has been given of late years, is *insanity*. Alice Bennett (*Med. Standard*, December, 1890), thinks the mental disturbance in these cases is due to the renal insufficiency. Florant holds a similar view, but he thinks the patients have usually a "neurotic diathesis" (*Gaz. des Hôpitaux*, July, 1890). Raymond has reported an interesting case (*Gaz. Med. de Paris*, November, 1890), in which the mental alienation was more marked whenever there was an exacerbation of the renal disease.

The form of insanity differs in different cases. Acute mania may occur in chronic Bright's disease, as in a case mentioned by Raymond.

Sometimes the insanity takes the form of mental weakening, as in the following case:

Mrs. J., married a number of years and having two children, came under my care in the summer of 1889; she was then 43 years old. Twelve years before, just before the birth of one of her children, she had received a violent shock—had seen a man murdered in front of her house, and for months she lived in constant terror because her husband's life had been threatened by the Molly McGuires, who were then terrorizing the coal regions of Pennsylvania. Her child was born shortly afterwards and she finally seemed to recover her health and spirits entirely till some years afterwards—I could not learn the exact date, dropsy developed and Bright's disease of the chronic parenchymatous form was found to exist. From this time she continued more or less of an invalid, and her mind gradually weakened until she became almost entirely imbecile.

The following case presents a different picture:

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The only other complications which I shall mention now are those connected with the *respiratory* system.

By far the most common of these is dyspnœa, which may occur in paroxysms or be more or less continuous. As a general thing it occurs in the late stages of the disease, but not uncommonly it comes on at a comparatively early period. Nor are all cases to be traced to the same cause. Leaving out of consideration its occurrence in pneumonia, which is not a rare complication of Bright's disease, it may be traced to, 1, uræmic poisoning; 2, cardiac failure; 3, pulmonary œdema; 4, œdema of the larynx; and in some cases to, 5, pleural effusion.

So far as I can judge from my own experience, the paroxysmal form is most common in interstitial nephritis, and is commonly connected either with a temporary but decided diminution in the amount of solid urine discharged or with cardiac degeneration and dilatation. It occurs especially in persons having a gouty history, as in the following case:

Mrs. D., aged 69, was taken about 2 o'clock one morning with a severe asthmatic attack which lasted several hours, and was finally relieved by inhaling the smoke of burning "niter paper." The family history of this lady showed a remarkable tendency to gout and she herself had gouty deposits in the finger joints of both hands; her heart was considerably enlarged and her pulse full and hard. From that time to the present she has been subject to similar attacks of dyspnœa, which are always relieved by the same means. She has frequent attacks of giddiness, often so distressing as to cause her the greatest anxiety, and her urine is abundant and of low specific gravity. I have seen her in a number of these attacks, and in none has there been any evidence of heart failure, so that I think the dyspnœa can scarcely be attributed to this cause.

Some years ago I saw in consultation this lady's brother in an advanced stage of interstitial Bright's disease. The trouble from which he suffered most was dyspnœa, but in his case it was plainly due to weakness of the heart's action and perhaps dropsical accumulation in the chest, for he had severe attacks of angina pectoris and there was general dropsy in addition; his heart was greatly hypertrophied and his arteries atheromatous. He died a few months later in an attack of angina pectoris.

In other cases the dyspnœa is plainly due to *pulmonary œdema*, but it is questionable whether this occurs frequently, if ever, unless there is serious loss of heart power.

*Œdema of the larynx* is a rare cause of dyspnœa, and only occurs, so far as I can learn, in cases characterized by great œdema elsewhere.

*Pleural effusion*, even in small amount, sometimes causes a very marked difficulty of breathing, as in the following instance:

A woman 24 years old applied at my clinic in November last for treatment. She had a general œdema and her urine was scant and contained albumen in very large amount. She had never had a child and the trouble came on gradually. She was given digitalis, squills and niter, and in a short time the dropsy had disappeared and she said she felt much better, but her urine contained albumen in large quantity. She was given wine and digitalis, and gained flesh and strength for some time. In January she complained of some pain in the right side and considerable dyspnœa, and flatness was found at the lower part of the left side of the thorax. She was again given digitalis, squills and niter, and the urinary discharge was greatly increased. In three weeks the pleural effusion had disappeared and the dyspnœa was almost entirely relieved.

Time will not permit a consideration of some other very interesting complications of chronic Bright's disease. It would seem from Formad's investigations that *pericarditis* is one of the commonest causes of death in the chronic forms of this disease, whether parenchymatous or interstitial, and yet I am satisfied it is often overlooked, and it is probable, I think, that in some cases the dyspnœa is due to this.

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# OBSERVATIONS BASED ON AN EXPERIENCE WITH NEARLY ONE THOUSAND CASES OF TYPHOID FEVER.

Read before the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY JAMES B. HERRICK, M.D.
CHICAGO.

Within the past five years I have seen in the city of Chicago, in Cook County, Presbyterian and St. Elizabeth Hospitals and in private practice, nearly one thousand cases of typhoid fever.

The following observations are based on the experience with these cases:

Observations the result of clinical experience are accepted as true by the reader, only so far as the facts accord with those he himself has noted, or as the conclusions appeal to his reason, or as he has confidence in the ability of the observer to make accurate observations and correctly to interpret them. I fully realize the truth of the Hippocratic motto Professor Osler has put at the head of his book, "Experience is fallacious and judgment difficult," and I am aware of the weak points in a paper clinical in character, not experimental nor even statistical; and I fear lest what I write may seem trite and commonplace, for I am daily made conscious that much that is being put in type concerning the clinical side of typhoid fever is really but the restatement, though often from a different standpoint, of facts old, known to our predecessors, and often plainly set down in words in works now regarded as out of date. I have repeatedly been surprised, not to say chagrined, to find that some fact new to me, and that came to me with the pleasurable freshness of a genuine discovery, was a fact already noted by previous observers. [It pleases one that one's own conclusion, arrived at independently, tallies with that of a Fagge, Murchison, Liebermeister, Eichhorst, Trousseau or Flint; but one is chagrined to think that it requires a reading and again and again, a rereading in the light of experience to fasten the facts once read firmly in mind.]

It has been my aim in preparing this paper to touch only those points of unusual interest, because rarity of the clinical phenomena, or because current literature, or discussion among medical men, seems to betray variety of opinion concerning those matters, or what has seemed at times a wrong conception of them.

*Circulatory System.* The pulse of typhoid is a *slow* pulse, and this notwithstanding a high temperature. I could show many history sheets where the pulse never reached one hundred, while the temperature ranged from 103° to 105.5°. The average in women is higher by five to fifteen beats to the minute than in men. A pulse of ninety in a bed-patient, with a temperature of 103°, should be regarded as a diagnostic feature in favor of typhoid. A pulse of over one hundred and six in a male with typhoid is one needing most careful watching. And above all, a pulse that is, especially in the first two weeks, to-day one hundred, to-morrow one hundred and four, one hundred and ten, one hundred and sixteen, etc., is one of bad omen.[1] The disproportion between pulse and temperature is, I believe, as characteristic of typhoid as is the rapid pulse of scarlet fever. Liebermeister lays great stress upon this point, and says that of those with a pulse as high as 140, 50% die; over 140, 80%; over 150, 90%. The compressibility of the pulse and its frequent dicrotism, and occasional intermittent character, have been repeatedly noted. Bradycardia is a common phenomenon of convalescence; but, on the contrary, many a patient whose pulse has never exceeded one hundred while in bed and who, as apyrexia has been reached, has had a pulse rate of only fifty or sixty has, on first getting out of bed, had the pulse jump to one hundred and twenty or one hundred and forty. The pathological basis of this irritable heart may be in myocardial degeneration. One of the County Hospital typhoids who left contrary to orders, after the temperature had been normal for only one week, on arriving home and after climbing two flights of stairs, fell suddenly dead. No autopsy was permitted. The existence of this cardiac irritability during convalescence carries its own lesson of enforced quiet during this period.

It has seemed to me that the absolute rest that has been insisted upon, together with the naturally low arterial tension and slow heart beat, especially as convalescence approaches, might account for the large number of cases of femoral thrombosis met with. In private practice I have seen it in five per cent. of cases in adults, never in children. In the Presbyterian Hospital last fall about one in ten had thrombosis. Murchison is authority for the statement that it occurs usually in only one per cent. of cases. No serious consequences have followed this complication beyond the persistence, often for months, of œdema of the affected limb, whenever the limb was for any length of time in a dependent position. I have never seen pulmonary embolism in consequence of femoral thrombosis. No veins other than the femoral or its radicals have been affected.

Arterial obstruction by thrombus or embolus has not been met with in any of these cases.

Twice during convalescence an increase of temperature, pulse one hundred and twenty to one hundred and fifty, distinct endocardial murmur where none previously existed, in one case, praecordial pain, have given evidence of the rather rare complication, acute endocarditis. In one case there were, inside of a week, subsidence of temperature, reduction in pulse-rate, and almost total disappearance of murmur. In the other, the patient, at the end of four weeks in bed, left the hospital with rapid heart and mitral systolic murmur.

*Skin.* In my experience sweating is not usually present until late in the disease, that is, a sweating not produced by antipyretics. The statement of authors are here at variance; for instance, Pepper stating that sweating is more common in typhoid fever than in almost any other of the acute diseases, except malaria, relapsing fever and rheumatism.[2]

The papular rose-colored eruption has been present in the great majority of cases, yet absent in many. Eichhorst's one thousand consecutive cases with rash in every case is an unique record. It has seemed to me that where the papules were very abundant the patient was always very sick. On the contrary their scantiness, or absence, was no evidence of a light case. In only one case have I noticed the eruption on the face. In this instance it covered the arms and legs as well, and persisted, appearing in successive crops for over four weeks. I do not remember to have seen labial herpes in typhoid. The "peliomata" or "taches bleuâtres" I have seen but once. Body lice were found in this case. Bed-sores have been rare, owing to careful nursing. The only circumstances under which a bed-sore in a patient properly nursed can possibly be excusable and be looked upon as other than a blunder, as Dr. Henry calls it, is where an intestinal hemorrhage demands, for a time, absolute quiet of the patient. The skin over the sacrum kept moist by the oozing, bloody stool will become rapidly necrotic under a few hours pressure. One of the cases of acute endocarditis, above referred to, occurred in a patient with an unhealed suppurating bed-sore; I regard this as the infection atrium. The daily sponge bath with soap and water and also with alcohol, *i. e.*, the keeping of the skin as aseptic as possible, is I believe, responsible for the very few cases of furunculosis I have seen. I can recall but one case and that of moderate severity.

Facial erysipelas has not occurred in my cases, though in a few cases that sprang up in one of the wards at the County Hospital there was a uniformly fatal result.

*Respiratory Tract.* Epistaxis has been an early phenomenon in about 20 per cent. of cases. It was seen, not infrequently, in influenza, yet by no means as often as in typhoid. Severe epistaxis during the height of the disease, such as to cause evidence of acute anemia and to call for radical treatment, I have met with twice.

Laryngeal ulceration has not been carefully sought for. In one case only has laryngeal perichondritis occurred. This was in a lad of seventeen and convalescence from an unusually severe typhoid. A laryngeal ulcer, detected by the laryngoscope, probably gave to the bacteria admission to the deeper tissues resulting in the suppurative perichondrial inflammation. The patient recovered under tracheotomy, though he nearly died later by the closure of the tube through plugs arising from a fibrinous bronchitis. I do not know of any other instance of perichondritis in either the Presbyterian or County Hospitals during five years. Dr. E. Fletcher Ingals, whose counsel in this case was of great value to me, tells me that in twenty years experience as a laryngologist he has seen but one other instance of perichondritis arising during typhoid. Hölscher reports fifteen cases among 2,000 fatal ones.

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[1] Chantemesse, quoting Malherbe and Parizol, says the period of cardiac weakness begins [illegible] nty beats to the minute and that the pulse of the [illegible] ween 8 and 104 in men and 101 and 120 in women [illegible] —p 756.

[2] An American Text-book on Theory and Practice of Medicine; Vol. 1, p. 70.

Bronchitis has been of such frequent occurrence as to be regarded rather in the light of one of the pathological accompaniments of the disease, than as a complication. Its extent and severity, however, in some instances have made it a source of danger, and obscured the diagnosis. Once a case I regarded as miliary tuberculosis arising during typhoid, or perhaps, such from the beginning, made a complete recovery and compelled a return to the original diagnosis. And once in consultation, remembering this case, I was enabled rightly to reverse the diagnosis of tuberculosis back to typhoid.

Pneumonia has been very rare, at least rarely recognized clinically and *post-mortem*. Its insidious onset, the absence of chill, additional temperature, cough and rusty sputa, make us fall back on rapidity of respiration and physical signs as diagnostic data and rapidity of respiration is by no means a reliable sign. Many cases are probably due to the streptococcus, possibly the bacillus typhosus, and not to the diplococcus of Fraenkel. I believe the stern insistence upon strict cleanliness of the mouth and nose is responsible for the small number of cases of pneumonia and severe bronchitis I have seen. Air inhaled through a foul nose, mouth and pharynx carries to bronchi and alveoli numerous bacteria that excite irritation, if not specific inflammation. Inhalation of bronchitis and pneumonia I have aimed to avoid by oral cleanliness, and by insisting that the patient should be made often to change the position from one side to the other, and to the back, and lately by instructions to have him take several times daily full and deep inspirations. By these procedures fewer organisms enter the respiratory tract, there is less passive congestion of any one part, mucus tends less to accumulate in any one portion of the bronchi or alveoli, and it is more readily dislodged by the cough excited by the deep inspiratory effort.

*Fever*. The highest temperature observed was 106° axillary. This was in a child of ten years who had been given, by visitors, cake and candy. The mild course of the disease seemed from this time on to be aggravated, delirium, involuntary discharges, rapid emaciation following with continuance of unusually high temperature. Recovery followed. In another case, in private practice, a colored woman of forty, who varied her liquid diet by occasionally indulging in crackers, meat, peanuts and popcorn, and whom I could not induce to go to the hospital, and who spent nearly one-third of her time out of bed, I found twice a temperature of 106°. Three days after a normal evening temperature had been reached, she was up, weak and trembling to be sure, but doing a fair day's work at the ironing table. Her boy of ten years with a typical typhoid was, during his illness, never in bed for any one twenty-four hours, and never undressed. He recovered. In several cases temperatures have been prevented, I think, from passing 106° by antipyretic measures.

I have become strongly impressed with the great tenacity with which the fever in the early days, say the first twelve days, will cling to the high points in spite of our efforts to make it let go its hold. Again and again nurses have told me with despairing faces, how after half an hour's sponging, the temperature has actually gone up instead of down. And, during the early days larger doses of antipyretics are required to produce an appreciable effect on the body heat. In the third week the fever is much more tractable. The five grains of phenacetin that on the ninth day barely reduced a temperature of 105° to 104°, will on the fifteenth cause a drop from 105° to 100°, or even to subnormal. I have learned to be extremely cautious in giving even moderate doses of these drugs in the third and fourth weeks of the disease. Seldom do I give more than three grains of phenacetin or two grains of acetanilid at such a time. The sponge bath at this time will usually reduce temperature without difficulty.

Prolongation of temperature when all evidence of typhoid is past, *i. e.*, when the bowels are regular, rose spots and tympany have disappeared, tongue is moist and spleen apparently normal in size, and where no demonstrable complication is present, is a very perplexing condition whose pathological cause cannot in all cases be explained. Catarrhal inflammation of the small intestines, ptomaine absorption, nervous influences, post-typhoid anemia, may explain some cases. Unrecognized inflammation of the mesenteric glands may exist. Twice have I finally found a serious pleuritic exudate, trifling in amount, which I thought explained the temperature. Lately I have, in this class of cases, commenced a cautious use of solid food, in spite of evening temperatures of 100° or 101°, have, a few times, allowed the patients to get out of bed, and had gratifying results. The nervous excitement is allayed, the condition of the blood improved, and as strength returns from the additional nourishment, the causes keeping up the temperature seem to vanish. The pleural exudate in the two cases referred to, disappeared under light diet.

I certainly believe that errors in diet may be the cause of inducing not only a recrudescence but a genuine relapse. I have never seen more than two genuine relapses in one patient, the entire duration of the fever being seventy-seven days. Several times I have seen what was apparently a reinfection occur before the temperature had reached normal.

Mild cases have been common. Apyretic typhoid I diagnosticated once on the basis of exclusion of other diseases, prevalence of typhoid, mental dullness, physical weakness, condition of tongue, enlarged spleen and slightly tympanitic abdomen, as well as by the fact of gradual improvement at the end of three weeks. Two other cases in the County Hospital, though not in my service, have been diagnosed as apyretic typhoid. One of these recovered. The second came to autopsy and typhoid fever lesions were found. This latter case must convince even the skeptical of the actual existence at times of typhoid infection without fever.

Of so-called abortive cases, or rapid cases, those that run their pyrexial course in from ten to twenty days, I have seen several, and especially in children.

In one boy of five years, rose-spots, delirium, diarrhœa, subsultus with typical temperature, going as high as 105°, make the diagnosis of typhoid unequivocally sure. Yet on the sixteenth day there was no fever, nor other evident relic of the disease.

*Alimentary.* The tongue gives to me much less evidence in making up a diagnosis, than in forming a prognosis. Only once have I seen a pharyngeal ulcer, and in this case on the uvula and extending slightly over to the soft palate.

In two cases parotid abscess has formed. Strict cleanliness of the mouth preventing so far as possible severe stomatitis and infection of the parotid by way of Steno's duct is the best prophylactic against suppurative parotitis, as it is one of the preventive measures against bronchitis and pneumonia, and middle ear suppuration. One case of parotid abscess was in a patient who came under my care on the tenth day of her illness, and who was in circumstances such that no nursing that ought to go by that name, was obtainable. She had, without exception, the filthiest mouth I ever saw in a typhoid.

In several cases vomiting had been so prominent early in the disease as to obscure diagnosis, by drawing attention to the stomach. It usually subsides in a few days. Vomiting late in typhoid has rarely been met with, and always excites suspicions of over-medication or over-feeding. Diarrhœa has not been present in more than half the patients, and then usually appearing in the second week. Patients with diarrhœa are sicker than the constipated.

Hemorrhage has occurred oftenest in cases attended by diarrhœa. I have never seen any benefit follow these hemorrhages, but on the contrary have too often seen death follow, once even in an hour, after the first appearance of blood, or later after the repeated recurrence.

Tympanites I seldom meet with, now that I use from the beginning some intestinal antiseptic, usually salol. Certainly its occurrence to such an extent as to be regarded as complication is a rarity compared with its rather frequent manifestation four years ago.

It is a mistake to expect sudden, sharp pain whenever intestinal perforation occurs. In some cases pain has been so marked as to cause the nurse to hurry for the house physician, with her diagnosis of perforation. But I have seen three cases where the patient, with perception not even ordinarily blunted by the disease, has had no sensation of sudden pain, made little complaint of pain save on rather violent manipulation of the distended abdomen. Autopsy in one case enabled me to make the diagnosis, in the other two it confirmed the antemortem diagnosis. Loss of liver dullness, especially if shortly before the dullness had been present, is a valuable sign, though not infallible.

*Urine.* Retention has several times necessitated catheterization. In a few instances a mild cystitis followed. Nephro-typhoid has been rare. Albuminuria has been common. Ehrlich's test has been frequently applied. Dr. A. R. Edwards,[3] then interne at the County Hospital, made a careful examination of the urine of one hundred and thirty typhoids (not all in my service) and found Ehrlich's reaction in ninety-eight and one-half per cent of the cases. He also found the reaction marked in the urine of tubercular patients, malarial, septicæmic, anemic cases, etc. It is known to be usually present in the urine of measles. Its diagnostic value is, therefore, extremely limited. Its absence speaks with a fair degree of certainty against typhoid, yet it failed me once in a case of typhoid just when I most needed it.

*Nervous.* I am convinced that under the treatment by intestinal antiseptics there is less delirium than without this method. A great many patients are mentally quite bright throughout the illness. Post febrile melancholia I have seen twice, and well marked mental weakness once. All three cases recovered. One case of peripheral neurities was observed in the Presbyterian Hospital last year, the lower extremities being involved. In not a few cases pain has been complained of over the region of the spleen. This I took to be due to a tightly stretched splenic capsule. Pain and hyperæsthesia in the soles of the feet and in the leg, especially over the tibia, have been several times observed during convalescence.

I regret my inability to furnish exact figures as to the proportion of cases among new comers to Chicago. In private practice twenty-six per cent. of my patients with typhoid had been in the city less than one year. I am confident that in the County Hospital where foreigners make up a goodly percentage of the inmates, thirty or forty out of every one hundred typhoids were new comers. The large influx of population to Chicago for the past few years, the new comer not possessing immunity against typhoid infection, may explain in a measure the fearful prevalence of this disease during the past five or six years. It has seemed to me that the new resident has been especially liable to a severe form of the disease. Almquist[4] quotes Murchison as saying that sixteen per cent. of his typhoid patients had not been in London a year. Louis is quoted as noting about the same percentage of new city residents among his typhoids and Almquist thinks in his own practice the same is true. "He who has not been early exposed to the poison," he says, "more easily falls a victim to the same." The frequent occurrence of the disease among medical students coming to Chicago from the country is worthy of note.

The necessity of extreme care in the nursing of typhoids, in the disposal of excreta, etc., has been strongly impressed upon me by the occurrence of a second case in the family in ten instances where the nursing was done by unskilled nurses or by the members of the family, as well as by the variety of the appearance of second cases where the services of a careful nurse have been available, and by the very infrequent appearance of typhoid development in the wards of our hospitals where at times in a single ward forty and fifty patients with illness other than typhoid have been crowded in among as many typhoids.

The bellying of the muscle as the biceps on sharply pinching it I seldom fail to find even quite early in the disease. I have found it as well in pneumonia, pulmonary tuberculosis, septicæmia, very rarely in malaria.

TREATMENT.

*Rest.* The recumbent position in bed has been insisted upon even during mild cases. No patient has been allowed to get up until there has been a normal temperature for at least a week, and in the greater number of cases for a longer time than a week.

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[3] The Medical News, April 2, 1892.

[4] Sammlung Klin. Vortrage, No. 5, 1890. Ueber die Hauptmomente der ætiologie des Abdominal typhus.

*Diet.* Liquid diet has been ordered, consisting chiefly of milk given at regular intervals every two to four hours, day and night, an adult taking, on an average, three pints during this time. Coffee, chocolate, cocoa, beef-tea, ice cream, egg-albumen water, egg-nog, are allowed to vary the monotony of the milk diet. Light diet is not allowed until there has been a normal evening temperature for from three to five days.

*Fever.* Sponging has been resorted to in most cases, whenever the temperature reached 103° or 103.5°. Cold, tepid or warm water has been employed, according to the effect upon the individual patient, or his likings. The ice-pack has been occasionally made use of, as has the ice-cap, and ice-coil to the abdomen. The cold bath treatment has not been employed, because circumstances made it unavailable. At times in private practice, and the hospital where crowded wards made systematic sponging for temperature a physical impossibility for the limited number of nurses, and again in those cases before mentioned, where sponging failed to produce the desired effect, antipyrin, phenacetin, or acetanilid have been given. Since I have learned to be cautious in using these remedies, and to give small or moderate doses, I have never seen any bad effect. Lowered temperature, slower pulse with firm, full beat, improvement in mental symptoms, free perspiration are the effects usually noted.

*Intestines.* Salol, ten to twenty grains in twenty-four hours, has been given in almost all of my late cases. Either these cases have been naturally light, or the intestinal antiseptic has modified the course of the disease, so that symptoms of intoxication have been less marked. The mind is clearer, there is less delirium, diarrhœa and tympanitis are present only in a trifling degree; prostration and emaciation are comparatively insignificant. An initial dose of calomel has been very frequently administered.

An enema usually of glycerin and water has been regularly administered on alternate days, whenever necessary by reason of constipation. Turpentine for excessive diarrhœa, especially if combined with tympanitis, has seemed, in cases, of benefit, though for tympany the enema, or use of the rectal tube, is more reliable. I have lately avoided opium unless strongly indicated.

*Perforation.* Surgery offers the only hope of relief, and from the fact that perforation occurs usually at a time when the patient is poorly able to withstand the shock of beginning peritonitis, let alone that of anæsthesia and operation, the recoveries must necessarily be few. When occurring in a patient not profoundly depressed by the disease, where the diagnosis is made early, and surgical interference is prompt, operation may result in cure. I was privileged to see the case under the care of Drs. Fisher and Van Hook, where the early and accurate diagnosis of the one and the prompt and scientific operation of the other resulted in a brilliant recovery. Of several cases operated on in the Cook County Hospital all have proven fatal. In no case where perforation has been diagnosed before death has there been any evidence of localization of the resulting peritonitis. General peritonitis and death have always followed.

*Circulatory.* The loss of four women in as many weeks in the female ward at County Hospital, where ante- and post-mortem diagnosis failed to reveal the anatomical lesion of any complicating disease, and where death occurred from sudden failure of the heart and collapse, taught me to give early, before symptoms of cardiac failure begin, some cardiac stimulant. Nux vomica, or strychnia I usually prescribe often from the start in small doses, so that the amount can be gradually increased. Alcohol I give much less freely than formerly, reserving it for the class of cases where in the third week we have the patient in the typical typhoid state.

*Hemorrhage.* I give ergot and acetate of lead usually, opium always. The latter drug even if it have no direct effect upon the circulation, quiets the patient, often restless and anxious from the acute anæmia, and lessens the peristaltic movements of the intestines. Cold is usually applied to the abdomen. The efficacy of treatment, save that of rest and opium, is doubtful.

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## TREATMENT OF TYPHOID FEVER.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

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When the chairman of this Section invited me to read a paper here on the hydriatic treatment of typhoid fever in private practice, I wrote him that I would come but only deliver a short sermon on this text.

The cool bath treatment of typhoid fever can, ought, and will be carried out in private practice.

This method can be carried out in private practice; this I know, because I have been using it now for almost three and one-half years during which time I treated over ninety-five cases and must have had administered over 5,000 baths. Incidentally I would remark that so far I have never been called on account of any mishap or dangerous symptom depending on the baths. Now I think what I have done any of you can accomplish. My patients belong to the class of artisans and laborers, thus representing the masses of the people and the bulk of the community, and I think I have thus demonstrated that for the people as a whole the method is adapted. It would seem to me that amongst the educated and well-to-do I should have—in some respects at least—less of difficulties to overcome, because the former can more fully appreciate the reasons for the application of the method, and because the latter are better able to carry out the method to perfection.

And yet, while I insist upon it that the method is one generally applicable I am fully aware that there exist objections and difficulties in connection with this line of treatment. I will mention three. The first one which I think is the most valid one is this: It is not a pleasant sensation to step into a bath of 68° F., and the last five minutes which the patient has to remain in the bath seem very long to him. Furthermore, we know that four out of five of our patients would get well without the treatment, and on this topic allow me to quote from a letter from Dr. Brand: "As far as the pleasantness, or the opposite, of the method is concerned you may give my regards to the gentlemen in Milwaukee, whom I should very much desire to answer the question which I have proposed to the confrèrés in France and Germany, but which has not been answered by them nor by myself. What are the signs in the beginning of the illness which will allow one to discern whether the course of the disease will be grave or mild? Out of 100 cases eighty will get well, and do not require the hydriatic treatment in its entirety. These are made to suffer to no purpose and might be treated more pleasantly if one could only recognize that they would certainly get well. But as this cannot be done, they have to be treated exactly as the twenty that are (or would be) doomed to die. It would be a great step forward if this matter could be remedied, and I would be the first one to express my joy and congratulations to him who could point out to me the signs of an absolutely favorable prognosis."

But to come back to the unpleasantness of the bath. Dr. Osler in a lecture quoting from a letter illustrates this difficulty. The quotation reads: "The prayers, entreaties, supplications, and last, but not least effective, the lusty yells of this girl at each bath were such as not to materially increase the repose of the neighborhood or strengthen to any extent the nerves of the family."

While I can not complain particularly about my female patients, and while I think that Dr. Osler pictures here an extreme case, I fully appreciate what Dr. Osler wishes to say, and know from experience with my patients enough of this matter—yet I am obliged to say that there are thousands and millions of sensible people in this country who are willing to be chilled and to shiver in order to increase their chance of recovery; mothers will do it for their children, fathers for their family—young people for their parents and themselves, and the physician certainly has no right to withhold the baths from his patients on this account. When the patient has positively refused to be bathed it will be time enough to do that. Should all the sensible people be deprived of the benefits of the baths, because a few silly persons behave like children? I think not. Furthermore, the patient is amply repaid for his sufferings lasting minutes, by sweet sleep and feelings of *bien sauci*, lasting hours.

In passing I will remark that in my opinion patients would suffer far less from a bath 68° of fifteen minutes than from one 70° or 72° of twenty minutes.

The second objection may be put in this form: The method is so complicated, demands so much time, so much skill and training on the part of the attendants that but rarely the conditions will be found that will allow the execution of the method.

Now, my experience has shown me that this objection is not as formidable as it seems to be. I have told you that the method was carried out by my patients, and only exceptionally were the conditions such that the method could not be employed. The majority of my patients were treated by other members of their family or friends, without any nurses. Glancing over my list I find A. Nehrenz, over ninety-five baths, nursed by his parents. O. Beyer, over ninety baths, also nursed by his parents. Soph. Walker, seventy baths, bathed by her mother and aunt. Rob. Schacht Schneider, nursed by wife and her sister. Ida Mann, sixty-seven baths; Anna Mann, eighty-eight baths, sisters, nursed by parents.

A great many of my patients have been nursed even by inexperienced persons with great accuracy and thoroughness—and to show how perfectly the thing is often carried out I send around the record of such a case, a young man nursed by his father and mother.

Now, there are thousands upon thousands in this country who are able and willing to do this as well—why, let me ask you, should they be denied the privilege of doing it—even if there be a few ignorant and slovenly people who can not use the method or do not care to use it?

But while a great many of my cases have been treated by members of the family, yet nurses, who have learned to use the method and have some experience with it, are in some instances a necessity and would be a great boon in every case, both to patient and doctor. There are some families that have very little natural ability for nursing, or that lack the necessary determination to carry out the treatment of our unwilling patient, or the case may be a grave one, where no error should occur, or where contingencies might arise to make modifications of the directions necessary—in all such cases nurses should have charge of the case, and nurses then may be put down as a necessary part of the outfit to carry on the treatment. But this can not be urged as an objection to the method. It will be our duty to train such persons, and to overcome that difficulty.

The third objection is, *the method will strike the laity as something so dangerous and unheard of that its introduction will be next to impossible.*

Here again my experience has shown me that this objection on the part of laity is not insurmountable—it has not been very great even. In fact, the hindrances to the introduction of the method are to be looked for somewhere else. I have found that if I asked 100 persons of the laity to use the baths, ninety-five used the baths, five refused. If I ask 100 doctors to employ the baths, ninety-five will refuse and five only will make use of them.

Why should a patient be afraid of the method if his physician can insure him that there is no danger? Where the method can not be introduced there must be something wrong with the relation of patient and physician. I must admit that where the method is altogether unheard of it requires some backbone on the side of the physician, but there are men who have that. I believe that there are always sensible people who will not object to the use of the method. They will set an example and happily the good effects of the method are so glaring that the laity, especially such as know something about typhoid fever and the zero effects of the medicinal treatment, will soon be converted and will recommend the method to their friends. Inasmuch as I refuse to treat any case not willing to use the baths, I had some patients go somewhere else—but for every case I lost I have gained two or three. In the first year I had to do some talking and had to make my patients acquainted with the contents of these tables, but now I think the majority would not be treated otherwise than by baths, and people come to me for the very reason that I use the Brand method. Of course, the laity really become acquainted with the good effects of the baths sooner than the physicians, because the latter never see them.

And now if there are any present who should feel like giving the method a trial, to them I would give a few words of brotherly advice under the following heads: 1. Bath tubs.—First of all when you get home have a bath tub. I had one one-half year before I could use it, and while it was standing around in my shed my wife had her own opinions about the big box. My tubs are four cornered and of sheet iron; a convenient size being 5¾x2 feet and sixteen inches high. If you have such a tub you will feel like using it, and if you have not, you will have a good excuse for not using it. The reason why you should have your tubs on hand are three: First, your patients, thinking you know all about the method, will use it with more confidence. Second, you can save expense to your patient and make it easy for poor people. Third, you can act promptly. My once lonely tub has now nine companions, of course of different sizes, and with none of my instruments have I done as much as with these tubs.

2. Nurses.—As soon as you have a chance instruct one or more suitable persons in the use of the method. Such persons must have a natural inclination to such work, be willing and able to do bodily labor, must be reliable, wide-awake, cleanly and a little domineering—so that patients will obey her orders. I have trained two such nurses and the success I have had is in a large part due to their excellent qualities, and I say in cool blood, if one of my children should have typhoid fever and I should have the choice between all the medical wisdom in this room—that of Murchison thrown in, *without the bath tub* and between one of these nurses with her tub, I should unhesitatingly place it under the care of the nurse.

At times when the patients are in moderate circumstances, such a nurse goes to the house just for a day or two; by that time the family will have acquired the necessary skill and—what is of the same importance—the necessary courage. But as there is not much expense for medicine when the baths are used, and as the physician can restrict the number of his visits if one of his nurses is present, people who otherwise can not, are enabled to retain a nurse. and how much good do they not get out of a *good* one? Our nurses need not belong to the so-called trained nurses—we need some muscular christianity here. I do not know much about them. Seeing some little patients with a colleague, one of these trained nurses brought a long column of figures showing pulse and temperature, absolutely good for nothing, excepting to show off her having been trained. Had she, instead of disturbing the patient, darned the stockings or washed the diapers, I would have more respect for her and her kind. Such sort of persons we have, of course, no earthly use for. Pick out your own material and train it if you can.

3. First case.—You may do yourself and the method a great deal of harm, as did the young physician about whom Prof. Osler tells in his lecture, in case the first case you treat does not get well. Therefore, it is a thing of doubtful propriety to begin using the method on a case that has become grave and is in an advanced stage. I cannot urge upon you too strongly to make yourself acquainted with the views of Brand on this matter, who informs us that the principles for treating such cases are quite different from those for treating fresh cases. Let your first case then be one which you can treat from the beginning, and at the same time accurately, according to Brand.

4. Early cases.—The cases which will offer you the least resistance to the use of the method will be such, where friends or relatives have died from the disease. Here friends and patients are apt to yield readily, and further, those who had experience with the disease, having nursed perhaps a grave case under medicinal treatment, will appreciate your efforts more than others without such experience. I was much amused at a mother of one of my patients detailing to me the good effects of the hydriatic method. She had formerly nursed two other children through attacks of typhoid and could not help drawing comparisons.

5. Get your cases early, as it is of great importance that the baths should be given from the very beginning; inform your families, so that they will report early. Making visits if you have a few minutes to spare, tell them about the Brand method, what has been accomplished with it, how favorably it influences the course of the disease; if they are well-to-do people tell them how to buy a thermometer and how to measure the temperature in the rectum and tell them to report early. And if typhoid fever patients come to your office hand them a thermometer to be used in the evening, so that the baths may be begun next day if necessary.

6. Follow the directions of Brand as accurately as possible, and do not try to improve upon it. Let me also tell you that Vogl says one ought not to be discouraged if during the first years our success is not as great as those of men who have used the baths for twenty or thirty years.

And now let me just speak about a few cases illustrating what we have to do in using the method:

About a year ago, between 5 and 6 o'clock P.M., I was called to a lad 13 years old, with a high fever, ill a few days. His mother was a widow who went out washing, and the household was a poor one, but not a dirty one—the latter fact telling me that I might use the Brand method. Perhaps the circumstance that the mother was poor and went out washing would have been in the eyes of many a sufficient obstacle to the use of the method, washerwomen perhaps being considered too poor and not intelligent enough to carry out the treatment. But I inform the woman that if I am to treat the boy she must use the baths—which she is willing to do—I suppose she had heard of them and she had lost a brother formerly and did not want to take a chance on the life of her boy—she made no objections. Although the diagnosis was not yet certain, I told the woman to send for my four and one-half foot tub and a thermometer; I show her where to place the tub, in a room, adjoining the bedroom; I tell her to fill it one-third full of water from the hydrant, and to have the boiler full of boiling water by 8 o'clock. At 8 I go to the house, I instruct the woman in the use of the clinical thermometer, show her how to shake the mercury down, have her introduce the thermometer and read it, etc.; we then prepare a bath of 88°, and while I support the head of the boy and use a pail of cold water, the mother rubs the body and limbs; after ten minutes we take him from the bath, dry him, and he walks back to his bed. I now inform the mother that in three hours she is to measure the temperature of the patient again and if it is 102 the boy is to have his second bath, *this to be* 84°. *As she is alone I tell her to* procure a board, to place it slantingly under the head and shoulder, so that she will be able to give the bath without any aid; she is to use a pail of water for the head. Three hours after the second bath she *is to give one of* 80°, *and three hours later one of* 76°—providing the fever should rise to 102, and with the bath of 76° she should continue to give every three hours if necessary. She is to write down the time of the baths and the temperature of the patient. This will be enough for her to have learned for the evening. Next day I call again and I now inform her that she must take the temperature of the patient one-half hour after the bath. The boy will perhaps have been chilled by the last bath or two, and I inform her that this is just the thing we are after, that she must not be alarmed but that she may wrap the feet in a hot blanket and place a jug of water or some hot bricks against the feet when the patient comes from the bath. I tell her that the best time for feeding is one-half hour after the bath. I instruct her in making the compresses to front part of body—which exceptionally this boy liked. I do not insist on heavy feeding at any time, particularly not the first days. I tell her now to give the boy some hot drinks—punch if he likes it—when he comes out of his bath. And now to lower the baths to 72°, finally to 68° and to continue with 68°, of course only if the temperature reaches 102 in the rectum. Well, this was about all the work I had with the boy. The method was carried out perfectly and the washerwoman's boy was treated as well as anybody. I would here say that I am using less alcohol, as I have more experience. To women and children, if they do not like punch, I give none, and I would warn everybody not to mar the good effects of the baths by too much whiskey. How can *a stomach* carry on any digestive work into which one *and one-half* pints of whiskey are poured in twenty-four hours? Of course men who are accustomed to it should have their allowance.

My little patient had between fifty and sixty baths and my work after the first two days was short, consisting in reading the record, examining the patient and encouraging the mother. She seeing the splendid condition in which the boy continued, carried the method out thoroughly.

I think she spent not more than fifty cents for medicine. You see, in less than four hours from my seeing the patient he had his *first bath, and in twenty-four* hours the method was carried out according to Brand. It is so very important to begin at once. One can, if in doubt, use lukewarm baths; while these are being used the *attendants are* instructing themselves in the use of the method.

Quite differently did I act in the case the record of which I send around. I saw she was desperately ill, and I knew the husband was not much of a nurse, and she having a baby *five days old* made it necessary to have one present to inspire confidence, beside lending material aid. Under these circumstances I drove out and brought back with me one of my nurses at once, and I think that without such a good nurse I could not have managed that case. But we succeeded, and a glorious justification the method received in spite of the dismal prophecies of the whole neighborhood.

Then I had a case of a widow with a string of children from two years upward. Here there was *no money for a nurse* and a married sister was very timid. So I sent one of my nurses to the house, and after six baths had been given the necessary fortitude and skill for patient and sister was obtained and everything went ahead smoothly and much to the satisfaction of all concerned.

Here is another case where a nurse came handy and was necessary on account of the pertinacity of the fever entailing a good deal of work, because we wanted the baths colder, and because a good nurse will keep up the courage of the household.

Here is the record of a case where we had extensive bronchitis, lymph and diarrhœa, and delirium in a young baby; the baths acted like a charm here, one bad symptom after another disappearing.

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## TYPHOID FEVER—A SYNOPSIS.

Read in the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

BY M. J. CROUCH, M.D.
UNION, KY.

I retain the old name in preference to the newer ones, as "enteric fever." This new name refers to a single lesion, which lesion, however constant, is not the cause, exclusive seat, or descriptive of the condition; but is plainly the result of a general process.

Nor is all the fever produced in or confined to the intestinal tract. Typhoid fever is a specified condition of the economy, with local modifications.

We shall consider the *condition known as typhoid* fever first, then the lesions which are results of the process producing that condition. The laws of "disease" in general are to be reached inductively, by generalizations of physiological facts supported by clinical phenomena and *morbid anatomy*.

These laws applied to the special conditions under consideration, are illustrated and supported by the phenomena and changes observed.

The fever is the *result*, and not the *cause* of the abnormal condition. Heat is normal to the organism, and is produced in the culmination of nutritive metabolism. By cellular activity these changes are accelerated and the normal condition has become *abnormal. In keeping* with these principles we have developed slowly a continued febrile condition, finally the well known typhoid condition and complete asthenia.

*Lesions Associated with the Condition.*—We would *expect to find lesions* in those organs and tissues most directly connected with the process, and located where the process was most active. So *we find the* lymphoid tissue most prominently involved, as the glands of the intestines, mesenteries and spleen. The *spleen, as type, from all* attainable evidence seems to be intimately associated with the nutrition of the body and the blood-making process. That it is subject to morbid changes in so many diseases, especially in all continued febrile processes, would warrant the deduction that these *abnormal* processes were intimately associated with the normal nutritive process; the difference due to the form and course.

Physiological facts, supported by pathological data, warrant the following law: That disease is a process, differing *from the normal* processes only in "form and course." Clinical phenomena and morbid anatomy prove that in the condition typhoid fever, as well as in other diseases, nutritive changes take place. These changes only differ in form and degree from the normal changes necessary to the well being of the economy.

So this disease is not an entity, but a condition of the economy; a condition which involves a process at one time normal, but by reason of continued disturbance, no longer so.

Treatment must be a rational treatment.

The tendency in all "disease" is to return to health—the abnormal to become normal. We should aid this tendency. The means used may be called alteratives. I use the following: ℞. Hyg. cum. cretæ; acid salicylic: acid boracic. Also frequent and large draughts of water, rectal injections and warm baths. I give the baths every four hours during the fever. If necessary a cold douche after the warm bath, poured on head from a bucket. The length of warm general bath is varied from twenty minutes to one hour. Temperature 100° F.; of cold douche about 60° F. While the number of cases treated after this manner is not over twenty, the result has been remarkable; *duration of fever lessened, intensity mitigated,* mortality *nil.* Stimulants used if necessary, whisky, strychnia, also oil turpentine.

## DISCUSSION ON TYPHOID FEVER.

**Dr. Joseph Eichberg**, Cincinnati, O.—In discussing the value of the Brand treatment of typhoid fever it seems to me the first and only question it is fair to consider is what this treatment has accomplished that we can not obtain in another way. This question has in part been answered in Dr. Thompson's paper. It seems to me the only thing the Brand treatment offers, is immunity from severe nervous disturbances; patients who have been subjected to rigid hydrotherapy will not have delirium and pass into a comatose condition. But I do not think we are prepared to endorse the statement which has been made, that now we have the Brand treatment we ought not to try to do anything more but should adhere to it for all time. The gentleman has pointed out that the Brand treatment may be given under circumstances apparently of the most unfavorable kind, and he has pointed out that it is a very inexpensive treatment. But it is not inexpensive, for the giving of seventy to ninety baths during the treatment, means that when convalescence is established you will have an exhausted mother or sister as well as an exhausted patient. The Brand method does not shorten the duration of the disease —its warmest advocates admit that; it does not tend to diminish the tendency to relapse. It must be remembered that the Brand treatment is thirty-five years old, whereas the treatment by the newer antipyretics dates back only five or six years. Patients enjoy one advantage under the Brand treatment that other patients do not, that is constant supervision. The patient makes no movement of hand or foot that is not observed by an anxious nurse or relative previously warned of the dangers of any indiscretion. The same intelligent care, with modern antipyretics will secure equally good results—I am prepared to defend that statement with figures—with much less discomfort to the patient and less demand upon the nursing of the family. The lowered temperature which follows the baths is of uniformly short duration as compared to the effect obtained from moderate doses of antipyretics combined with friction of the skin with cold water while the patient is lying in bed. In the wards of the hospital in Cincinnati we have frequently tested this by limiting the Brand treatment to one side and on the other using the cold sponge and antipyretics every time the temperature reached 101.2°. With the baths alone the temperature has remained at 104.2° and 105°, in spite of the baths, and has gone up at times in the bath. While the temperature was still high, for the sake of observation these patients have been given a single dose of antifebrin and the temperature has gone down 4.2° to 5° and has remained down from twelve to eighteen hours, a result not possible with the use of the baths alone. I would not in any way discountenance the use of cold water in this disease, but I believe we can obtain its results without having two or three people to watch the patient, and using the thermometer every two or three hours, and without involving the patient in the discomfort of being plunged from his bed into cold water, with great pain at times. In children the results of cold sponging, with antifebrin in minute doses, are more striking than in adults. What is accomplished by the cold baths, the cold sponge can secure for us. The cold baths produce their effect not only by the reduction of temperature because that is not a constant attendant, but by stimulation of the peripheral vessels, securing a tendency of the blood towards the organs for the time being by the capillary action of the skin. Friction of the surface with cold water, will produce this result with less trouble. Dr. Sihler alluded to a case where the patient on the fifth day of puerperal fever was attacked with typhoid. I am not prepared to believe this was typhoid. A simple case of sepsis would probably run the same course as a typhoid attack.

As to the cheapness of the treatment, the cost of antifebrin is about 28 cents an ounce. With a temperature of 102.2° a single dose of antifebrin will lower it in four to six hours. I do not know of any case treated in the wards of the Cincinnati hospital in five years, in which we have used a half ounce of antifebrin in the entire course of the disease.

**Dr. William E. Quine**, Chicago—The more the temperature which is natural for typhoid fever is tampered with, whether by the Brand method of treatment, by sponging, or by the internal administration of the coal tar series of products, the greater is the liability of prolonging the course of the disease and the greater is the liability to relapse. In general terms it may be stated that relapse occurs in about six per cent. of all cases. In Prof. Thompson's paper something like ninety-five cases are reported where the Brand method was employed and relapse occurred in about ten per cent. of all the cases; sustaining the general proposition that the more the temperature of typhoid fever is interfered with, the greater is the liability to relapse and *the greater is the duration of the primary* attack in case no relapse occurs. There can be no question as to the utility and life-saving effects of the Brand method of treatment; there can be no question as to the utility and life saving effects of the judicious administration of the coal tar series. *But I submit that the Brand method* of treatment if used injudiciously, can be as destructive as can any medicine administered with a free hand, that is capable of producing ill effects. I have seen a patient die in the tub, I have seen patients seized with rigors while in the tub and develop a catarrhal pneumonia within a few hours afterwards. The liability of the development of complications in the administration of the Brand method of treatment is not to be altogether ignored or overlooked. The ferocity with which this method is employed by its enthusiastic advocates seems to me almost appalling; there is no contra indication in the minds of these gentlemen, to the administration of the cold bath, provided the patient is known or even believed to have typhoid fever. Pregnancy is no contra indication to the administration of the bath, and if abortion or miscarriage should occur it is no contra indication to the continuation of the bath; if hemorrhage should occur it is no contra indication to the continuation of the bath; just keep on administering the baths, and bid the patient God speed. It seems to me that this indiscriminate. wholesale, thoughtless administration of a single method of treatment is not to be commended; the time has not yet come when we can write a receipt for curing typhoid fever as a housewife writes a receipt for mince pie. One gentleman has spoken warmly of the utility of the antipyretic medicines of the coal tar series; I have used them as extensively during the past five years as perhaps most practitioners have done, and I have reached certain general conclusions in regard to the persistent administration of medicines of this kind; they increase liability to relapse, they increase liability to intestinal hemorrhage. I have had ten fatal cases of hemorrhage in one winter from typhoid fever, three fatal cases within a range of half a block and a period of six days, cases in which phenacetin had been administered as judiciously as I knew how from the beginning to the end of the history of these cases. It does not require many years of this kind of experience to compel one to regard the medicines of the coal tar series with a good deal of misgiving. Still I am prepared to reiterate that there are not a few cases of typhoid fever in which sponging alone will not be adequate to the control of bodily temperature, in which the cold pack will not control the temperature and in which the element of exalted temperature seems to be the dominant one. In these cases judiciously administered stimulants and phenacetin or antifebrin, will serve an exceedingly useful purpose. One gentleman has asked whether recovery will ever follow the administrations of these medicines; I have seen recovery follow dozens if not hundreds of times.

**Dr. Fuller**, Mass.—I am very much interested in typhoid fever for, as a general practitioner, I have attended it thirty years, four years in the army where I treated it by the French method of expectancy with a mortality of about 20 per cent. On going into private practice I chanced upon Letters to Young Physicians, by Dr. James Jackson of Boston, in which he gave his method of treating typhoid fever in the Massachusetts General Hospital. This method, which I adopted, was to give the patient in the beginning three grains of tartaric antimony. I washed the stomach, afterwards with salt water and then with clear water, and the result is to reduce the temperature from 103.2 to about 100, and the pulse will stay below 100° for a week or ten days; if it recurs I give salt and mustard and wash the stomach out again and then give tincture of iodine. Brand's method gives 7.5 per cent. of deaths, Dr. James Jackson reported 5 per cent. and in my practice I have not seen 5 per cent. of deaths in twenty-five years. I believe the clearing out of the stomach in the beginning, is very desirable in a great many ways; you have no fever to deal with and they do not become delirious. I have always used tincture of iron when I could in these cases; those cases in which the stomach is intolerable to tincture of iron are the ones I lose, when I do lose a case. We can go back to the old fathers in medicine and learn something; it is not as disagreeable to the patient to take one emetic, as to be put in a bath tub ten or twelve times a day for fifteen days.

**Dr. X. C. Scott**, Cleveland, O.—There are some questions connected with this subject which it seems to me need to be explained by its advocates: what becomes of the local congestion when you get a person in a cold bath of 60 or 75 degrees, when the blood is driven from the surface to the visceral organs? it seems to me that would insure hemorrhage, would insure congestion. The Brand treatment when carried out by its strongest advocates admits of medication aside from the bath; what becomes of the poison, what becomes of those retrograde metamorphoses that take place in all conditions where we have high temperatures? Are they eliminated through the Brand system; do you get rid of them through that system? I have heard it claimed in the discussion of this subject that the underlying effects of disinfectants in the stomach and abdominal canal was a total failure; that they didn't do a speck of good under any circumstances when administered for that purpose. How does the Brand system get rid of these changes in the alimentary canal? It seems to me the propaganda upon these major questions rests with the advocates of the system and it is not asking too much of them to prove it. Dr. Brand in his book has not answered these questions. I recall some fifteen or twenty years ago this subject was agitated and a committee was appointed by the various medical organizations which was to go into the hospitals and make experiments with this plan of treatment. They reported as a result of these experiments that they more frequently had hemorrhages and congestion of the lungs with this treatment than by other modes of management. That report made a strong impression on my mind and I have never forgotten it. Not long ago in a discussion of the subject I brought up the suggestion and a gentleman present said that this committee took the very worst cases they could find in the hospitals of Paris to make this experiment; but I think that is a mistake because they took the consecutive cases as they came into the hospitals and made a fair investigation of the subject. Thirty years ago the cold treatment of fevers was rampant over the whole country by means of the cold pack, cold effusion, cold applications of all sorts. What became of them? They were given a thorough trial and were utterly condemned and they went out of use entirely. I could detail cases in which serious accidents happened to patients under this sort of treatment and it seems to me that with the experience the profession has had we ought to go a little slow in adopting a system as laborious as this and as uncertain of good effects, for it does not shorten the duration of the disease and that is one evidence that they do not get rid of the ptomaine poison which causes it.

**Dr. J. M. Anders**, Philadelphia—I regret very much the absence of Dr. Wilson of Philadelphia, who has had a large experience in the treatment of typhoid fever by this method; had I known he would not be here I might have brought a few definite statistics bearing on the subject. I have assisted to some extent in carrying forward the work in Philadelphia, and am a thorough advocate of the method. Time forbids entering into all the points raised by the papers that have been read; it will suffice, therefore, to call attention to the facts that seem to me to be of leading importance. One gentleman thought the chilly sensations produced by the bath were beneficial. It seems to me that is rather unsound doctrine. Chilly sensations after a bath are usually very easily recovered from without bad effects, but chilly sensations produced during the first ten minutes of the bath, and after friction of the surface, should be a signal for the removal of the patient from the bath tub, at all events during the first bath in the case. Another point is that patients who are very weak, when placed in the cold bath should be held in one position by the attendants and as much of the surface of the body rubbed as possible; turning these patients about can do nothing else than harm. Dr. Eichberg advocates small doses of antifebrin as an antipyretic in the treatment of this disease, though only under certain conditions. We must bear in mind that this is an acute infectious disease, attended by high temperature that results in more or less degenerative change in the cardiac muscles, and it seems to me that any remedy that reduces temperature at the expense of cardiac power is not good. I have long since ceased to give antipyretics. Dr. Eichberg also said that the good effect of the cold bath was due in the take place. These changes only differ in form and degree from the normal changes necessary to the well being of the economy.

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DR. WILLIAM E. QUINE, Chicago—The more the temperature which is natural for typhoid fever is tampered with, whether by the Brand method of treatment, by sponging, or by the internal administration of the coal tar series of products, the greater is the liability of prolonging the course of the disease and the greater is the liability to relapse. In general terms it may be stated that relapse occurs in about six per cent. of all cases. In Prof. Thompson's paper something like ninety-five cases are reported where the Brand method was employed and relapse occurred in about ten per cent. of all the cases; sustaining the general proposition that the more the temperature of typhoid fever is interfered with, the greater is the liability to relapse and the greater is the duration of the primary attack in case no relapse occurs. There can be no question as to the utility and life-saving effects of the Brand method of treatment; there can be no question as to the utility and life saving effects of the judicious administration of the coal tar series. But I submit that the Brand method of treatment if used injudiciously, can be as destructive as can any medicine administered with a free hand, that is capable of producing ill effects. I have seen a patient die in the tub, I have seen patients seized with rigors while in the tub and develop a catarrhal pneumonia within a few hours afterwards. The liability of the development of complications in the administration of the Brand method of treatment is not to be altogether ignored or overlooked. The ferocity with which this method is employed by its enthusiastic advocates seems to me almost appalling; there is no contra indication in the minds of these gentlemen, to the administration of the cold bath, provided the patient is known or even believed to have typhoid fever. Pregnancy is no contra indication to the administration of the bath, and if abortion or miscarriage should occur it is no contra indication to the continuation of the bath; if hemorrhage should occur it is no contra indication to the continuation of the bath; just keep on administering the baths, and bid the patient God speed. It seems to me that this indiscriminate. wholesale, thoughtless administration of a single method of treatment is not to be commended; the time has not yet come when we can write a receipt for curing typhoid fever as a housewife writes a receipt for mince pie. One gentleman has spoken warmly of the utility of the antipyretic medicines of the coal tar series; I have used them as extensively during the past five years as perhaps most practitioners have done, and I have reached certain general conclusions in regard to the persistent administration of medicines of this kind; they increase liability to relapse, they increase liability to intestinal hemorrhage. I have had ten fatal cases of hemorrhage in one winter from typhoid fever, three fatal cases within a range of half a block and a period of six days, cases in which phenacetin had been administered as judiciously as I knew how from the beginning to the end of the history of these cases. It does not require many years of this kind of experience to compel one to regard the medicines of the coal tar series with a good deal of misgiving. Still I am prepared to reiterate that there are not a few cases of typhoid fever in which sponging alone will not be adequate to the control of bodily temperature, in which the cold pack will not control the temperature and in which the element of exalted temperature seems to be the dominant one. In these cases judiciously administered stimulants and phenacetin or antifebrin, will serve an exceedingly useful purpose. One gentleman has asked whether recovery will ever follow the administrations of these medicines; I have seen recovery follow dozens if not hundreds of times.

Dr. Fuller, Mass.—I am very much interested in typhoid fever for, as a general practitioner, I have attended it thirty years, four years in the army where I treated it by the French method of expectancy with a mortality of about 20 per cent. On going into private practice I chanced upon Letters to Young Physicians, by Dr. James Jackson of Boston, in which he gave his method of treating typhoid fever in the Massachusetts General Hospital. This method, which I adopted, was to give the patient in the beginning three grains of tartaric antimony. I washed the stomach, afterwards with salt water and then with clear water, and the result is to reduce the temperature from 103.2 to about 100, and the pulse will stay below 100° for a week or ten days; if it recurs I give salt and mustard and wash the stomach out again and then give tincture of iodine. Brand's method gives 7 5 per cent. of deaths, Dr. James Jackson reported 5 per cent. and in my practice I have not seen 5 per cent. of deaths in twenty-five years. I believe the clearing out of the stomach in the beginning, is very desirable in a great many ways; you have no fever to deal with and they do not become delirious. I have always used tincture of iron when I could in these cases; those cases in which the stomach is intolerable to tincture of iron are the ones I lose, when I do lose a case. We can go back to the old fathers in medicine and learn something; it is not as disagreeable to the patient to take one emetic, as to be put in a bath tub ten or twelve times a day for fifteen days.

Dr. X. C. Scott, Cleveland, O.—There are some questions connected with this subject which it seems to me need to be explained by its advocates: what becomes of the local congestion when you get a person in a cold bath of 60 or 75 degrees, when the blood is driven from the surface to the visceral organs? it seems to me that would insure hemorrhage, would insure congestion. The Brand treatment when carried out by its strongest advocates admits of medication aside from the bath; what becomes of the poison, what becomes of those retrograde metamorphoses that take place in all conditions where we have high temperatures? Are they eliminated through the Brand system; do you get rid of them through that system? I have heard it claimed in the discussion of this subject that the underlying effects of disinfectants in the stomach and abdominal canal was a total failure; that they didn't do a speck of good under any circumstances when administered for that purpose. How does the Brand system get rid of these changes in the alimentary canal? It seems to me the propaganda upon these major questions rests with the advocates of the system and it is not asking too much of them to prove it. Dr. Brand in his book has not answered these questions. I recall some fifteen or twenty years ago this subject was agitated and a committee was appointed by the various medical organizations which was to go into the hospitals and make experiments with this plan of treatment. They reported as a result of these experiments that they more frequently had hemorrhages and congestion of the lungs with this treatment than by other modes of management. That report made a strong impression on my mind and I have never forgotten it. Not long ago in a discussion of the subject I brought up the suggestion and a gentleman present said that this committee took the very worst cases they could find in the hospitals of Paris to make this experiment; but I think that is a mistake because they took the consecutive cases as they came into the hospitals and made a fair investigation of the subject. Thirty years ago the cold treatment of fevers was rampant over the whole country by means of the cold pack, cold effusion, cold applications of all sorts. What became of them? They were given a thorough trial and were utterly condemned and they went out of use entirely. I could detail cases in which serious accidents happened to patients under this sort of treatment and it seems to me that with the experience the profession has had we ought to go a little slow in adopting a system as laborious as this and as uncertain of good effects, for it does not shorten the duration of the disease and that is one evidence that they do not get rid of the ptomaine poison which causes it.

Dr. J. M. Anders, Philadelphia—I regret very much the absence of Dr. Wilson of Philadelphia, who has had a large experience in the treatment of typhoid fever by this method; had I known he would not be here I might have brought a few definite statistics bearing on the subject. I have assisted to some extent in carrying forward the work in Philadelphia, and am a thorough advocate of the method. Time forbids entering into all the points raised by the papers that have been read; it will suffice, therefore, to call attention to the facts that seem to me to be of leading importance. One gentleman thought the chilly sensations produced by the bath were beneficial. It seems to me that is rather unsound doctrine. Chilly sensations after a bath are usually very easily recovered from without bad effects, but chilly sensations produced during the first ten minutes of the bath, and after friction of the surface, should be a signal for the removal of the patient from the bath tub, at all events during the first bath in the case. Another point is that patients who are very weak, when placed in the cold bath should be held in one position by the attendants and as much of the surface of the body rubbed as possible; turning these patients about can do nothing else than harm. Dr. Eichberg advocates small doses of antifebrin as an antipyretic in the treatment of this disease, though only under certain conditions. We must bear in mind that this is an acute infectious disease, attended by high temperature that results in more or less degenerative change in the cardiac muscles, and it seems to me that any remedy that reduces temperature at the expense of cardiac power is not good. I have long since ceased to give antipyretics. Dr. Eichberg also said that the good effect of the cold bath was due in the first place to its causing the blood to flow to the internal organs, then to the surface, resulting in cooling the body by elimination of heat. Surely nothing could be farther from the truth than this. According to my own experience and the impressions gained from rather wide reading on the subject, the chief effect of the cold bath is its stimulating effect upon the nerve centers. Take its effect upon the centers of respiration; it stimulates at once a deeper inspiration, and in that way overcomes the tendency to pulmonary complications; the effect upon the stomach is brought about in the same way. Take its effect on the nervous system—a patient who is in a profound coma, or perhaps delirious, under the cold bath will show signs of returning consciousness, or will fall asleep.

Dr. Loveland.—While typhoid fever may be properly treated by the Brand cold water method, or by antifebrin and antipyrin, it has always seemed to me that those who claim so much for these remedies in the treatment of typhoid fever overlook the fact of the etiology of the disease,—that typhoid is produced by a germ, or rather by a ptomaine resulting from the typhoid bacillus in the bowel; the poison being absorbed by the alimentary canal is taken up by the system, poisoning the nerve centers. So there should be an effort made to subdue the poison in the alimentary canal. I have tried the cold water treatment; I have used antifebrin to a considerable extent, but my typhoid fever treatment consists in disinfecting the alimentary canal. A disinfectant that will destroy the ptomaines in the alimentary canal it seems to me will have a much better effect than to rely upon such remedies as will reduce the fever without going to the cause of the disease. Several years ago Dr. Wilson of Philadelphia, gave us a treatment for disinfecting the alimentary canal, composed of carbolic acid and iodine; that was used for some time with good effect, but it was not ideal treatment. We need something which when taken into the alimentary canal will pass into the bowels without being absorbed from the stomach; iodine and carbolic acid to a large extent is absorbed from the stomach and it takes too long a time to get the patient from under the influence of it and to disinfect the bowel. Naphthalin, properly given, when it passes into the bowel will disinfect it to such an extent that those hard discharges the patient has in typhoid fever that are offensive, will be made non-offensive; the odor is entirely removed in a short time. When the alimentary canal is disinfected thoroughly you will have no use for antifebrin. I have treated these cases year after year and I know from experience that when you get the patient thoroughly under the influence of naphthalin, or any of that class of remedies, the temperature will remain so low that antipyretics are unnecessary.

Dr. C. G. Stockton, Buffalo, N. Y.—I feel very greatly indebted to Dr. Sihler for showing to me what determination of purpose can carry out, in what has seemed to most of us a very difficult matter, and I admire the way in which he has succeeded in carrying into the homes of the poor a means of relief which cannot be too highly spoken of. I have seen enough of typhoid fever in the homes of the poor under ordinary forms of treatment to make me think that if this can be carried out with anything like success in the matter of detail, which has been done in Dr. Sihler's cases, the utmost good would come: That we have a fatality of the disease among the poor we all know. When we compare the statistics in private cases in the homes of the wealthy and the poor, we find a great difference. It makes a great deal of difference whether the patient is seen at first or at the end of a week. In hospital cases I have seen such great benefit from the Brand treatment that I think it is, so far as we now know, the best one to adopt. If I had typhoid fever I want the Brand treatment given me, because I shall be certain that when over it I will be in far better condition physically than after any other treatment. I have never seen patients come out with as strong hearts, as well preserved nervous systems, and in every way in as good condition as my ward patients during the last three years under this treatment.

Dr. C. Sihler, Cleveland, O.—I feel that the Brand treatment has not any too many friends here. I am a poor fellow to make friends; I don't think I ever convinced anybody of anything in my life. I find the logic of men differs and the logic of doctors differs, and of course we can not convince each other. As far as the men are concerned who have had no experience with the treatment, I do not listen to them. We have sulphur for the itch, mercury for syphilis and cinchona preparations for malaria—those are a few things with which we know we can do good, and in typhoid fever I think the Brand method has placed in our hands something that is equal. So far as pneumonia is concerned, if that is caused by the Brand treatment, we who use that method should see a good deal of it, but we don't. I would ask Prof. Quine whether the typhoid we have now is particularly liable to hemorrhage? It seems to me we lose more patients from hemorrhage than from fever. As to my case, of course I would be a brilliant diagnostician if I could diagnose every case of typhoid on the fifth day; the facts are the woman had typhoid fever before she was taken sick; the profuse local discharge, the rose spots, the course of the disease and the combined general symptoms proved to me that in that case I was right. As far as sponging is concerned, I know nothing about that. I thought it was a good thing in the Brand method that my patients know how to give the bath after I explain it to them. I would just as soon take a bath as to be rolled over and sponged. Just as the surgeon does not say that he can take care of a wound when he gets the case, one or two weeks after it has been made, so we do not claim success unless we can get our patients early, but our private patients ought to have the benefit of this treatment.

## VISCERAL PHLEBOTOMY.

BY DR. GEORGE HARLEY, M.D., F.R.S.
LONDON.
Corresponding Member of the Royal Academy of Sciences of Bavaria; of the Royal Academy of Medicine of Madrid: Vice-President of the Royal Medical and Chirurgical Society, London, etc.

*Pari passee* with the recent advances made in scientific physiology and pathology have most marked changes and improvements taken place in the medical and surgical treatment of disease. Some of them have appeared startling by reason of their novelty, others have intimidated on account of their seeming temerity. Many have been stigmatized as chimerical. While not a few have been actually condemned as being beyond the pale of rational therapeutics. Nevertheless on better acquaintance most of them have been found to be as replete with wisdom as they have proved to be pregnant with advantage to the healing art. Visceral phlebotomy, of which I am about to speak, may not untruthfully be said to belong to the latter class. For when it was first introduced by me to the notice of the profession in 1886[1] in the form of hepatic phlebotomy it was not only abused as a most dangerous, but stigmatized as a most unjustifiable operative procedure. Nevertheless, although only six years have glided away since its death knell was so vociferously sounded, instead of having been consigned to an oblivious tomb, it is not only still alive and flourishing, but has had added to it a twin sister in the shape of pulmonary phlebotomy, by Dr. Christian Simpson, and now I am about to advocate the extension of this mode of curative procedure to every other come-at-able visceral organ of the body.

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[1] Hepatic Phlebotomy, Brit. Med. Jour., Nov. 13, 1886—ib. Jan. 15, 1887.

Thinking no simpler or more effective place of proving either the safety of, or the benefits to be derived from any novel system of treatment can be adduced than by quoting successful illustrative cases, I will not waste time in exposition; but at once briefly narrate two most successful examples which can neither be gainsaid nor doubted; and in order to save space, and yet put it in the power of those specially interested in the subject to obtain possession of the details in each case, I will cite cases that have elsewhere been published *in extenso*. The one by myself,[2] the other by my son, Dr. Vaughan Harley:

*Case 1.*—The patient, a lady of intemperate habits, aged 38, was not operated upon until she was supposed to be in a dying state, from the combined effects of a greatly enlarged hard and inflamed liver complicated with ascites and marked anasarca. After Dr. Dunbar Walker (whose patient she was) had rendered her insensible with the A. C. E. mixture,[3] I pierced the upper part of the liver from right to left with an eight inch long trocar of the diameter of between a No. 2 and 3 sized English catheter. The normal liver being at least two inches broad in an average sized woman, and this liver being greatly enlarged—several inches both laterally and perpendicularly—I felt perfectly safe in thrusting the eight inch trocar up to its very hilt. This was done with the hope that during its penetration it might wound one or more blood vessels of sufficient caliber to yield a free stream of blood. On withdrawing the end of the canula about an inch or two, blood issued freely, and twenty ounces were abstracted. The skin around was then closed with a piece of sticking plaster, and a bandage applied. Such was the benefit derived from the operation, that from the very next day the downward progress of the case was arrested. The liver decreased in size, and with the aid of tapping, the ascites and anasarca disappeared, and within three months the patient was so well and strong that she could walk a distance of three miles, and she never had a return of the disease.

*Case 2.*—Is one of an entirely different character, cited with the view of showing, equally forcibly, the value of hepatic phlebotomy in a case of enlarged and inflamed liver—the seat of strumerous abscesses.

The patient was a country lad, aged 17, whom I was called to see by Drs. Cooper, They and Surgeon Heaven. The liver dullness extended from the right nipple level down to two inches below the umbilicus, and four to the left of the mucial line. Phlebotomy was performed while the patient was under the influence of the A. C. E. mixture. But although the liver was punctured in several places, such was the hardness and compactness of its tissues (on account of the inflammation) that only a very little blood was obtained. Fortunately, however, profuse hemorrhage took place some hours afterwards[4] from the wounded liver through the bile ducts into the intestines, with the result that within thirty-six hours the liver had diminished in size no less than an inch and a half all round, which made an enormous diminution, and within six days the first abscess had pointed and been emptied. In three days more a second abscess was equally emptied and on the thirty-eighth day the patient returned to his home in Lincolnshire, a distance of 120 miles, without a single bad symptom. The results of these two cases, must I think, convince even the most skeptical, not only of the safety of this operative mode of procedure, but of its utility as a curative agent; for without it, I have not the slightest hesitation in saying that both of these patients who were subjected to it would have been in their graves within a few days.

I now come to pulmonary phlebotomy first proposed and practiced by Dr. Christian Simpson.[5] This, I consider to be the most difficult form of visceral phlebotomy. From the fact that from lungs being contained within the ribs, and constantly contracting and expanding it is impossible by the application of an external bandage to bring the thoracic parietes into firm contact with the orifice of the wound made in pulmonary tissues, so as to effectually close it. Consequently the closure of the wound in the lung after the operation must be effected by the resistence of the pulmonary tissues being sufficient to retain a blood clot in the channel made by the trocar. In order to favor this, Dr. Simpson adopted the plan of "after the withdrawal of twelve ounces of blood the canula was held *in situ* with the finger over the end, to allow a clot forming, and then it was slowly withdrawn." . . . "The patient was immediately and markedly relieved, both as regards the cerebral (she had been comatose G. H), and pulmonary conditions. No effusion took place; there was only trifling hemoptyosis, and a suspicion of a small patch of pleurisy, without a rise of temperature." Dr. Simpson employed aspirating needles in his operations and although they did not prove like mine successful this can scarcely be said to have been due to any fault in the operation, but to the diseases complicating the pulmonary congestion for which the phlebotomy was had recourse to. Two of them being cases complicated with advanced organic heart disease, and the others, two cases of equally incurable Bright's disease.

Having thus shown that the apparently heroic method of extracting blood directly from an inflamed internal organ can not alone be practiced with safety on a favorably placed gland like the liver, but on one of the most unfavorably placed organs of the body for the successful performance of the operation, namely the ever moving lungs, I think I need scarcely dread censure if I boldly recommend the performance of visceral phlebotomy on every suitably situated internal organ, (when it is in a seriously congested condition) in preference to the application of leeches or cupping glasses to the external parietes over it, seeing that the cutaneous blood vessels have in no case whatever any direct communication with the internal organs lying beneath them. Consequently the theory of doing good is but a delusion, and the practice of leeching and cupping but a snare, if done with the intention of directly diminishing the amount of blood circulating through or stagnating in a visceral organ. As the withdrawal of blood from the cutaneous capillaries can only act beneficially in such *cases, in so* far as it diminishes the entire amount of blood in the body, and seeing that the largest of the internal organs forms but a small proportion of the whole frame, its thus diminished blood supply cannot be but an insignificant one. Whereas by my proposed method, as shown in the case of the liver where twenty ounces of blood were directly withdrawn, and Dr. Simpson's of the lung, where twelve ounces of blood equally directly extracted from the organ, as much or as little blood can be removed from the congested parts as the operator thinks needful.

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[2] Brit. Med. Jour., Nov. 13, 1886.

[3] This is a safer form orm, consisting of 1 part of absolute alcohol, parts of sulphuric ether proposed by me, a Committee "On the Uses and Effects of Chloroform,' appointed by the Royal Medical Chirurgical Society of London, (of which I was a member). See the Transactions of 1564, p. 341.

[4] This case is reported in full by my son Dr. Vaughan Harley in his paper "On Abscess of the Liver," Brit. Med. Jour. Nov. 23, 1689.

[5] "A New Method of Bleeding in some Forms of Pulmonary Congestion with Four Cases" Lancet (London) Nov. 1, 1890.

Within the last few days, I proposed extracting blood from a tender, greatly enlarged and inflamed spleen; but was thwarted by the nervous apprehensions of an imperfectly educated coadjutor, from his not knowing, that even needles as large as No. 3 sized catheters can be not only thrust into, but kept for twenty minutes in the ventricles of the hearts of living dogs, with perfect impunity. 'Tis knowledge which inspires surgical confidence and without it no one ought to attempt visceral phlebotomy.

For those who are about to have recourse to it as a curative measure for the first time, the following hints, perhaps, may be of service:

1. If it be deemed advisable to render the patient insensible, induce anæsthesia of the skin at the point selected for puncture, by the local application of the hydrochlorate of cocaine.

2. Select the seat of puncture, and give such a direction to the trocar as will ensure the point of its entrance with the organ, being brought into direct contact into the parietes by the application of pressure to them by a bandage after the completion of the operation, in order that the mouth of the wound in the organ may be thereby readily and effectually closed.

3. Let the trocar or aspirating needles be of the size of a No. 2 or 3 sized English catheter, and sufficiently long to penetrate deeply into the organ operated on, without there existing any risk of entirely transfixing it.

4. Let the direction of the instrument be such as to avoid its puncturing any large blood vessel.

5. When all these points have been attended to it will save the patient pain if the instrument be rapidly and at once thrust into the organ to the full depth it is intended to puncture.

6. If no blood flows, then slowly, and by distinct degrees, withdraw the canula, in the hope that a sufficiency of blood will ooze from the transfixed capillaries into the canal made in the organ by the instrument as will yield a free stream and enough for the required purpose.

7. When the wished for amount of blood has been obtained, before withdrawing the canula altogether from the organ, but just before it leaves it, in order to obtain a blood clot to stop up the wound with, place the finger on the mouth of the canula and keep it there till a clot has had time to form both in its interior and in the canal made in the organ itself by the instrument.

8. The next point is to get the clot in the canula to break off from that in the canal so as to leave the latter behind, in order that by its presence there it may prevent any oozing of blood from the organ, after the withdrawal of the instrument. This is best done, I think, by giving a slight twist to the canula at the moment it is felt to leave the organ. And the resistence of the tissues of the organ will cause them to contract sufficiently firm round the clot within it to prevent its being drawn out along with the canula.

9. All that now remains to be done is to place an inch square sized piece of adhesive plaster over the seat of the external puncture, and bind a pad over it with a long flannel bandage, sufficiently firm to insure the internal surface of the parietes being brought into close contact with the orifice of the wound in the organ; the more effectually to prevent the possibility of accidental internal hemorrhage taking place. All I have to add is that if I am not very much mistaken the day is not far distant when the old fashioned, erroneous, as well as unsatisfactory mode of withdrawing blood cutaneously, will be totally abolished in all cases of inflammation and congestion of internal organs, having no circulatory connection with the skin, and that the practice of visceral phlebotomy will become the recognized orthodox method of depletion in such cases.

## NECROLOGY.

**Dr. Louis A. Destrampes.**—President Oliphant of the Louisiana State Board of Health, received July 14, 1893, a cablegram from Bocas del Toro, United States of Colombia, announcing the death of Dr. Louis A. Destrampes, quarantine physician at that port. Dr. Destrampes was a well known citizen of New Orleans, a native of Havana, Cuba, where he was born in 1831. He had been a resident of New Orleans for thirty years.

**Dr. David Harlan** died July 12, at the age of 84 years, at his home at Churchville, Harford county, Md. Dr. Harlan was born near Stafford, in Harford county. He leaves four sons: Dr. Herbert Harlan, Judge Henry D. Harlan of Baltimore, W. B. Harlan and David E. Harlan. He was a member of the board of visitors to the Naval Academy at Annapolis, and a medical director in the United States Navy and was one of the best known and most highly respected citizens of Harford county.

Dr. Harlan began the study of medicine in 1829 under Dr. John Archer of Rock Run. He afterward attended the University of Maryland. He graduated in 1832 and located in Chestertown, Kent county, and practiced there for three years.

He applied for admission to the United States Navy and was examined in 1835 and commissioned as assistant surgeon. In the spring of 1835 he sailed from New York on the Peacock to Rio Janeiro, around the Cape of Good Hope to Zanzibar, to Muscat, Bombay, Ceylon, Bangkok, Siam and Canton, China. While in Siam the Asiatic cholera broke out aboard the Peacock. Dr. Harlan had charge of the vessel and lost but one of the crew. Upon his return to the United States two years later he was presented with a sword by the members of the crew. In 1872 he was stationed at the naval hospital on the government farm at Annapolis. He was promoted to the rank of medical director in 1871 and upon reaching the age of sixty-two he retired. He built Trinity Protestant Episcopal church at Churchville and was often a prominent member of diocesan conventions.—*Maryland Medical Journal.*

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**To Drain the Red River Valley.**—Gov. Nelson of Minnesota July 15 appointed an auditing committee under whose auspices the work of draining the Red river valley will be conducted in accordance with a law passed by the legislature. The committee consists of Gov. Nelson, Secretary of of State Brown, Ezra F. Valentine of Breckinridge, and Nelson D. Miller, chief engineer of the Great Northern railway. The work will proceed without delay. The drainage is rather for agricultural than sanitary purposes.

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## SATURDAY, JULY 22, 1893.

### THE PUBLIC PRESS AND THE PHYSICIANS.

> "If you would wish another to keep your secret, first keep it yourself."
> —Seneca.

The recent indisposition of the President of the United States has been made the occasion for a renewed attack by some influential members of the daily press upon the Code of Ethics. When these complaints are examined they are reduced to a single charge, namely, that Dr. Joseph D. Bryant, Surgeon-General of the National Guard of New York, who is at present the physician of President Cleveland, refused to give a detailed statement of the nature of the President's illness to the reporters who flocked to the Gray Gables cottage in great numbers. The voice in refusal was Dr. Bryant's, but the real culprit, they say, was the poor old Code of Ethics, and so the changes have been rung by one newspaper and another until the code of their imagination has not a morsel left of the original parchment.

But the attack on the Code was based on ignorance of its provisions, and a misunderstanding of the point involved.

The reporters assert that as the public is interested in the physical welfare of their Chief Magistrate, therefore the physician should give them daily or hourly bulletins of the progress of the case. They mistake the situation. The public has a political, not a personal interest in their President. The fact that a citizen of the Republic in whom the people have confidence, is in their service as President, can not operate to take away his personal rights as a citizen. No public man, whatever his rank or station likes to have his ailments set before the world. If he be really sick, the statement pleases only his enemies, and those sighing for his political estate. If he be suffering from a trifling ailment, even a detailed statement of the case is viewed as colored to suit the occasion, and a virtual concealment of some surely fatal affection.

The physician, whatever he may say or not say in attendance upon a public officer of high rank, is almost certain to be misunderstood. The wiser course then is to keep silence, commit to the family of the distinguished patient the duty of giving to the press such information as they may choose to give,

> "What to give, and what to keep
> Requires an understanding deep."

This action of the physician is based on regard for the feelings, and protection of the rights of the patient, and the Code of Ethics has nothing to do with the physician's refusal to make public the nature of the patient's illness.

Dr. Bryant has done a praiseworthy act in preserving silence in this matter, and his professional brethren will uphold him in his action.

### THE PRESENT STATUS OF THE SURGERY OF THE PROSTATE.

Among the many ills which were marked *noli me tangere* until recent years, and which modern surgery has done much to relieve, prostatic hypertrophy occupies a very prominent position. There is no disease perhaps, in which routine let-alone policy has done so much to retard surgical progress as in the one under consideration. Thousands of old men have had their declining years made miserable by prostatic disease for which neither medicine nor surgery offered substantial relief. Indeed, the most miserable period of the old man's life has usually begun with his first experience with his surgeon; *i. e.*, his initiation into catheter life. Thousands of old men are to-day suffering unspeakable tortures because of the so-called conservatism and total reliance upon the catheter practiced by their physicians.

With an increasing confidence in modern surgical methods, pioneers in the surgery of the prostate have sprung up within something over a decade, and much has been accomplished. In 1884 two papers appeared which were destined to become memorable landmarks in prostatic surgery. The Harrison operation of perineal puncture, and McGill's operation of supra-pubic prostatectomy marked the beginning of a new era in genito-urinary surgery. Guyon, Moullin, Wyeth and many others have been enthusiastic workers in this field, but we are mainly indebted to Reginald Harrison and the late Mr. McGill, of Leeds, for the principal advances in the surgery of the prostate that have been recently made. Scarcely less important, however, has been the popularization of supra-pubic cystotomy by our distinguished countryman, Hunter McGuire. The resources at present at our command may be briefly stated as follows:

1. Supra-pubic cystotomy followed by the establishment of a supra-pubic fistula and simple drainage.
2. Supra-pubic cystotomy and removal of projecting growths, division of a bar at the vesical neck, or incision of the floor of the prostate and lowering of the level of the prostato vesical outlet.

Supra-pubic cystotomy may be combined with simple dilatation of the prostatic ring.

3. Perineal drainage by **Harrison**'s method of tunneling the prostate.
4. Perineal prostatectomy or dilatation as circumstances may require.
5. Combined supra-pubic cystotomy and perineal drainage.
6. **Dittel**'s operation of enucleation of the lateral lobes of the prostate by external incision.
7. Supra-pubic section with symphyseotomy.

The greatest drawbacks to any method of operation on the prostate are: 1, the danger of lighting up acute hyperæmia or even inflammation in already damaged kidneys; 2, the ever present danger of sepsis.

Unfortunately we have no very accurate data for determining the precise degree of so-called surgical nephritis present. We are, however, justified in inferring considerable renal impairment in long standing cases of prostatic hypertrophy.

The danger of both uræmia and sepsis is in direct proportion to the length of time that the patient defers operation.

With earlier operations and the method by two stages, surgical intervention should be much more encouraging in its results.

There is one point in relation to supra-pubic cystotomy with simple drainage, which should be better understood, viz.: this operation is something more than a *dernier ressort* for palliative purposes; it is often directly curative. It will be found that the rest secured to the prostate and bladder promotes absorption of the adventitious growth which constitutes a large part of the obstructing tissues at the vesical neck. The enlargement of the prostate proper is, in a large proportion of cases, a minor factor in the pathological *ensemble* known as prostatic hypertrophy. Glandular and interstitial hyperplasia in the tissues about the prostate and vesical neck, constitute the bulk of the mass felt through the rectum. This hyperplasia is largely due to the disturbance of micturition which exists. With the relief of this disturbance, resolution occurs, and if the prostate be examined by the rectum some weeks after a supra-pubic cystotomy for prostatic obstruction, considerable reduction in size will be observed. Prostatic obstruction is not due primarily to disturbance of micturition, but once the latter occurs, it becomes responsible for certain plus conditions which can only be removed by putting the bladder at rest. By considering these points, we are able to understand how a simple supra-pubic section may restore the normal function of micturition *per vias naturales*.

In many cases, a combined supra-pubic and perineal section constitutes the ideal operation. Through and through drainage has manifest advantages in certain cases, and the operation is not greatly complicated by a *boutonniere;* then, too, any circumscribed obstruction may be removed by the route which seems most favorable. With thorough dilatation of the prostatic ring, followed by prolonged perineal drainage by a large tube, it is rarely necessary to do a cutting operation on the prostate itself. It is to be remembered that we are working in a septic field, and not a scratch should be made unless necessary for the removal of circumscribed obstructions. Symphyseotomy would seem to offer a very valuable aid in some cases of prostatectomy, especially when the peritoneal fold extends low down, or the bladder is greatly contracted.

With a combination of symphyseotomy and the **Trendelenburg** position and cross section, the prostate may be attacked with great facility, even under seemingly unfavorable circumstances.

It is to be hoped that ere long the general practitioner will be more appreciative of the advantages of surgical interference in prostatic disease. There is no reason why such cases should be allowed to suffer indescribable torture, to die finally sacrifices to a conservatism that conserves nothing but a routine let-alone policy which has no place in surgery.

In closing, it might be well to invite attention to the practical fact, that prostatic hypertrophy—so-called —begins at a much earlier period than is usually supposed. The disease is usually dated from the time of the appearance of disturbed micturition, and it is well to remember that the disease is far advanced before the vesical function becomes disturbed. Careful treatment at an early period will often prevent serious trouble in after life. Perineal drainage early in the case is comparatively safe and may bring about complete cure. The free exhibition of ergot in combination with the iodide and bromide of potassium for a prolonged period may, if begun early, act so effectively as to enable us to avoid operative interference.

## A CONVENTION OF AGED PEOPLE.

Some members of the staff of *La Science Médicale*, of Paris, have arranged for a convention of very old men at Paris, their object being to make a biological record and comparison. No person under ninety years of age will be eligible as delegate, and every one who offers himself for membership must show positive proof of the time and place of birth. The management of the congress promise to defray all the traveling and hotel charges of their nonagenarian guests, and good medical care will be devoted to them in order that they may undergo no improper strain or exposure. Prizes in the form of gold medals and money purses have been arranged for, and will be presented by the presiding officer, Dr. de

BOISSY, at the end of the convention. The president is himself a hearty centenarian who has practiced medicine at Havre for seventy years. No restrictions as to nationality are to be placed upon the delegates, but it is not expected that any very old contestants will appear from beyond the confines of France. At the time of the last French census, there were about two hundred men and women whose ages were reported at or beyond the centenary point. There is, however, little probability that many centenarians can be present, since the by far greater number of them have their homes at points remote from the place of meeting. A very considerable proportion of the alleged centenarians who were found at the time of the last census, were residents of the departments that border along the Pyrenees.

## ARMY HOSPITAL CORPS DRILL.

There will be issued from the office of the Surgeon-General of the Army, in the course of a few weeks, a small volume of about 100 16mo. pages, which will require a good deal of concentration of mind to enable medical readers generally to understand it,—we refer to the Hospital Corps Drill Regulations," the manuscript of which is now in the Government printing office. The elaboration of this system of drill has been a work of time; and there are few medical officers of the Army, who have not contributed ideas towards its progress. Previous to the organization of the Hospital Corps in 1887, the men detailed from the line of the Army for hospital duty were drilled and disciplined as soldiers with their companies; but since that organization was effected the officers of the medical department have become responsible for the drill and discipline of their men. Many of the younger officers and not a few of their seniors took kindly to the work implied in this and entered with enthusiasm into its prosecution. The men had to be taught, and the officers had not only to learn to teach but to decide upon what was needful and proper to be taught. As the men constituted a military body they had to be moved, when necessary, after the manner usual with such bodies; and when thus drilled they had to be taught the management of the litter and of the wounded man. A Provisional Manual, complied by Major Charles L. Heizmann was issued, not so much as a guide to be followed, but as a suggestion; and medical officers were requested to vary and improve its methods in practice. As a result many criticisms on every paragraph of the Manual were forwarded to the Surgeon-General, and six or eight complete systems were formulated by as many Army medical officers and submitted for approval and adoption. The Provisional Manual was found to be particularly defective in its primary drill; and a board of officers consisting of Majors Smart, Havard and Captain Brechemin, was convened at Fort Leavenworth, Kansas, to consider the various propositions and decide upon the best methods. A cardinal principle of this board was to limit the authorized movements to those absolutely needful and to exclude everything that savored of dress parade. Military movements were to be restricted to the maneuvering of the men as a company or detachment; and when drilling with dummies as wounded men each litter squad of the detachment was required to be drilled or instructed individually so as to prevent any attempt by over zealous tacticians at commanding the simultaneous movement of wounded men by a number of squads. This board labored under the difficult task of providing a litter drill that would be applicable to any litter, as the style to be adopted in this important part of the equipment of a bearer company was then an unsettled point. The board printed the results of its labors and sent copies to every military post for trial, suggestions and criticism, and after a delay of some months on this account, the "Manual of Drill for the Hospital Corps" was published in 1891. This, however, was but one of the steps in the progress of evolution. A litter was adopted ultimately with a sling attached to each of its poles, and as the Manual of Drill gave no instructions for the management of a fixed sling, Majors Hoff and Havard were directed to consider the subject and revise the volume, embodying in their revision all the improvements which their experience as commanders of the companies of instruction at Forts Riley and Russell led them to suggest. This revision after criticism by those officers who had shown special interest in the elaboration of the drill, is the work shortly to be issued. Few medical volumes of its size have had so many minds concerned in its production. Few have had the value of their every word weighed so carefully before acceptance. In fact this little book, when it makes its appearance, may be regarded as one of the curiosities of medical literature. Many surgeons of the National Guard are as much interested in it as our friends of the Army because the subjects of organization, drill and instruction in first aid are prominently before them, as may be seen by the report of the proceedings of the meeting of the Association at St. Louis, Missouri, in April, 1892.

## THE MAYOR OF CHICAGO AND HIS ISLAND.

At this time when six thousand men are engaged in the work of digging a drainage canal for the turning of the Chicago river away from the lake, his honor, the Mayor has made public his desire to build an island at a considerable distance from shore—say eight or ten miles if need be—and there obtaining the purer water, which is to be brought to the city through extensions of the existing tunnels. His honor fails to specify how long it would remain uncontaminated if Chicago continues to grow, and her population to increase. A few years ago, the proposition to build a four mile tunnel was viewed as visionary, and a useless expenditure of money. Now that there is little doubt that the water may occasionally be contaminated at that intake, the proposal to place it six miles further into the lake does not seem preposterous; but it does not touch the real evil. The danger to the water supply is from that open sewer which the Chicagoese call the Chicago river. That stream keeps on pouring into the lake a black, stinking mass of non-disinfected sewage. The evil can not be remedied by lengthening tunnels or building pleasure islands for the Mayor. The sewage should flow away from the drinking water, and be diluted with lake water as it flows. The great drainage canal will doubtless accomplish the work in time. It is learned that four years more will be required for its completion. In the meantime the enlargement of the pumping facilities, long ago advocated by Illinois' most distinguished sanitarian, John H. Rauch, is the need of the hour.

### AN APOLOGY.

Referring to our issue of June 24, 1893, and particularly to the editorial article attacking Dr. R. Harvey Reed of Mansfield, O., for having, as is alleged, sent out a circular letter assailing The Journal and its former editor, we have to say that we regret the publication of the editorial, as we are satisfied that Dr. Reed only sent the letter to the members of the Business Committee and certain members of the Board of Trustees, and was not actuated by any motive hostile to the Association Journal or its best interests.

## SOCIETY PROCEEDINGS.

**The Mitchell District Medical Society** held its twenty-third annual meeting at West Baden Springs, July 12, 13, 14, under the presidency of Dr. Dudley S. Reynolds. Some of the proceedings are of permanent value.

A comprehensive essay on the "Importance of Early Operation in Tuberculous Disease of the Bones and Joints," by Dr. B. Merrill Ricketts of Cincinnati, awakened an interesting discussion, which was followed by a clinical examination of a case presented by Dr. A. J. Banker of Columbus, Ind., with supposed tuberculosis of the knee joint, involving the lower end of the femur. The child was anæsthetized with chloroform, and brought before the Society for examination. The discussion of the case was opened by Dr. A. M. Owen of Evansville, Ind., who had been designated to assist Dr. Banker in conducting the examination. Dr. Owen concluded inasmuch as the epipheses had already been separated, no operation could so well readjust the parts, as to avoid a degree of shortening which would render the limb perfectly useless, wherefore he considered amputation the best proceeding, in hope of securing a good stump for the adjustment of an artificial limb.

Dr. Joseph L. Bauer of St. Louis, considered the question of tuberculosis by no means settled in this case, and inclined to the belief that the disease resulted from mechanical injury. He thought the parts should be laid open, and all necrosed portions of the bone chiseled away, and, if found desirable, the medullary canal might be curetted; all these proceedings being conducted aseptically as far as possible, he would hope to preserve a useful limb; this failing, we might still fall back upon Dr. Owen's plan of amputation.

He regards tuberculosis of the long bones and joints a comparatively rare affection, believing that a very large percentage of them arise from mechanical injuries.

Dr. Owen did not wish to be understood as admitting the tuberculous nature of the affection without further analysis, but as the subject under discussion was tuberculous disease of bones and joints, he felt that if this were really a tuberculous affection, amputation in this particular case offers the very best hope of restoring the health of this particular child.

Dr. E. P. Easley of New Albany, Ind., read an interesting report of "Intestinal Disease," in which a mistaken diagnosis had been concurred in by a council of able surgeons. The paper will be published.

A brief but classical essay on "Surgery of the Tendons," by Dr. John B. Hamilton of Chicago, was referred to a special committee, consisting of Dr. A. M. Owen of Evansville, with instructions to direct the publication and furnish copies to all the members.

"Indications for Operation in Laceration of the Cervix," by Dr. T. S. Galbraith of Seymour, Ind., proved very entertaining, and awakened considerable discussion by Dr. Rufus B. Hall of Cincinnati, who did not think anything like so much importance should be given to this slight injury, for it often proved to be of little consequence, and he thought rarely demanded operative interference, he would say never, excepting where other complications exist.

Dr. L. H. Dunning of Indianapolis, and Dr. A. M. Owen of Evansville, thought the fashion of operating in such cases had brought a legitimate procedure into some unmerited disfavor. The experience of others was such as to lead them to the belief the profession at present exercised a closer discrimination of suitable cases for operation, hence operations rendered necessary by complicating pyosalpinx or ovarian disease, leave out of account the more easily discovered lacerations to which formerly had been attributed all the symptoms of the real disease within the pelvis, which, menacing life itself, finally demanded attention.

Dr. Sexton felt sure the cases of lacerated cervix in which operative interference seemed necessary were perhaps more common in some sections than in others. He was not prepared to take either extreme as a rule in practice; he felt that each case was a law unto itself.

Dr. Rufus B. Hall of Cincinnati, read an entertaining account of ten cases of "Ectopic Gestation." As it was directed that the paper should be published, your reporter feels that it would be an injustice to speak of any point in the discussion, except the remarkable fact that Dr. Hall had seen his first case in 1891, and a half dozen of the series occurred within a radius of 600 feet from the central one of the group.

Dr. Dunning of Indianapolis, whose experience is very large had never encountered a case, and had therefore, no experience to offer. Dr. Owen of Evansville, practiced nearly twenty-five years without seeing a single case, and then had three within a few weeks of each other. Others expressed similar views; and it became clearly proven, as Dr. Larrabee of Louisville, pointed out, that the distance to which one's experience must go, to lead him to a case of ectopic gestation, and the rapidly succeeding cases following the first one, make it very clear that, although the spermatic cell in this case has an abnormal distance to travel, it multiplies with great rapidity when it reaches its destination.

Dr. Sexton of Rushville, Ind., presented an essay on the "Clinical Features and Therapeutical Indications of Pelvic Inflammation, including Peritonitis," which was pronounced by Hall, Dunning, Owen, and others the most graphic picture ever read in their hearing. The classical style of the author, with his vivid portrayal of his subject must be read to be appreciated properly; it will soon appear in print.

Dr. M. F. Coomes of Louisville, reported two cases of acute "Catarrhal Laryngitis in Children;" in both cases membranous croup was suspected, and the doctor was summoned to perform intubation, which, upon examination he thought should be delayed, and in a few hours, exudation coming on, relief to the embarrassed respiration followed, without the necessity of instrumental interference. He pointed out some of the dangers from the use of cocaine thrown into the air passages, and reported an almost fatal case of cocaine poisoning from a simple instillation into the eyes of a few drops of a 4 per cent. solution.

Dr. S. G. Dabney of Louisville, reported two cases of "Retinitis Albuminurica," in which disease of the kidneys had not been suspected until after examination with the ophthalmoscope.

Dr. Larrabee of Louisville, thought the question of blood pressure had received too little consideration in such cases, and felt the failure to recognize the real disease until such advanced stage of atheroma as that described by Dr. Dabney should not have been permitted to occur and shows the general evidences of this state have been recklessly overlooked to wait until organic disease of the retina, either in the form of fatty degeneration or hemorrhage, before recognizing the dangerous arterial condition which must precede that state. It is about as reckless as the failure to discover the presence of rickets until the deformity of the bones has already appeared. To be brief, he wished to say the disease of the eye in the so-called albuminuric retinitis was just one of the results of the general disease, and should not be counted a part of the disease itself. The fact that similar appearances occur in the kidneys, either before or after the local lesion in the eye, should simply be recognized like the eye affection. as the result of the general disease. And so with the altered osseous structure following rickets; the bone affection being the result of rickets, and not a necessary part of the disease.

Dr. A. J. Banker in the course of his report on surgery, mentioned the case of a child born with *atresia ani* in which he was able, by an operation, to make an artificial anus which performed all the functions of the natural organ.

Dr. A. M. Owen of Evansville, in presenting the subject of skin grafting, warmly endorsed the Thiersch method. He recited numerous experiences in his own practice which showed the importance of a very large, thin graft, and of the absolute necessity of constantly keeping the graft moistened in a solution of chloride of sodium, for the first four or five days. He considered the largest graft which may be cut so as not to include any sub-cutaneous tissue, the most desirable.

Dr. E. G. Sterne of Indianapolis, read an essay on "Structural Changes in Syphilitic Neuritis," which he illustrated with a very handsome series of microscopic sections; altogether making a very valuable demonstration.

The "Treatment of Fibroid Tumors of the Uterus" was so ably presented by Dr. L. H. Dunning of Indianapolis your reporter fears any attempt at reference to details, inasmuch as the paper will be published.

An essay on "Balneotherapy" by Dr. C. G. Comegys of Cincinnati, was directed to be published.

"Heroes of Peace," by Dr. Joseph Gardner of Bedford, Ind., formed one of the very entertaining popular essays, which was enjoyed by the public, as well as the profession, on Thursday evening. It is needless to say he selected a Doctor of Medicine as the typical hero of peace.

Dr. Jos. L. Bauer of St. Louis, read a practical essay embracing a series of interrogatories concerning the "Nature of the Proper Treatment of Fractures of the Shaft of the Femur." The technical character of the subject, and its general importance, forbids your reporter's attempt to deal with the minute points in the essay; or the various aspects of the subject illustrated in the discussion, which was conducted, in the main, by Drs. A. M. Owen, A. J. Banker, and S. H. Charlton.

On Thursday evening, Dr. Dudley S. Reynolds of Louisville, President of the Society, delivered the annual address in which he pointed out the importance of medical societies, and the permanent value of many of their deliberations.

He emphasized the fact that the profession of medicine is in the strictest sense, a learned profession, and in no possible relation a matter of business, or a means of earning a livelihood merely.

He described, in good English, the necessary features of a good education; which, according to his description, must begin in childhood and continue through life. He then explained the various stages of progression in the course of training for the boy who contemplates the study of medicine; and made it clear that those who indulge a love of study, and possess a tender sympathy for suffering humanity which dominates all other impulses and desires, are the only persons qualified to become members of this noblest of all professions or avocations in life.

He considered the medical society merely a post graduate school of instruction; and alluded in glowing terms to the classical essay of Dr. Sexton, as a brilliant illustration of the fact that intellectual greatness dwells in the man, regardless of the locality of his residence. He showed how Dr. Sexton, living in a remote rural district, had measured lances most successfully with the great metropolitan surgeons, whose experience in a single day eclipsed his own for a whole year's time. Sexton, nevertheless. has the genius of professional aptitude, and made his observations with an unerring certainty of detail that, every point noted in a single case became a pivotal point in the law governing that period of the morbid process.

The medical society brings together geniuses, and great doctors, and small doctors, and doctors of the intermediate class. The great men learn a little more greatness, the small men learn a little more, and the intermediate men are elevated to a plane above mediocrity, as the necessary result of the interchange of opinion based upon observed facts. Humanity receives benefit from the improved methods of practice more widely disseminated through the discussions of medical questions; and so medical societies must be encouraged by all thoughtful people in every civilized nation as among the most valuable congresses of men.

Miss Clara Barton, President of the Red Cross Association, on invitation described briefly the nature of that beneficent International Association of Philanthropists, which has already challenged the admiration of the intellectual world.

Officers—Dr. A. J. Banker of Columbus, Ind., was elected president; Dr. John A. Larrabee of Louisville, first vice-president; Dr. Rufus B. Hall of Cincinnati, second vice-president; Dr. G. W. Burton of Mitchell, Ind., secretary and treasurer; and Dr. Thomas Galbraith, chairman of the committee of arrangements for the mid-winter meeting at Seymour, Ind.

The Society adjourned on Friday at noon.

## ASSOCIATION NEWS.

**Another Report from the Pacific Coast.**—The meeting at Milwaukee will, on the whole, be regarded as a success. The attendance was good, the number registering being 867. It was hoped that the presence of the Fair in Chicago would greatly increase the attendance, while at the same time the ninety odd miles separating the two cities would prevent the Fair proving too powerful a counter-attraction. This was only partly true, for while the proximity of the big show undoubtedly increased the number of visitors, it was very noticeable that there was a thinning out even on the first evening, a more marked diminution on the second, and on the third afternoon nearly half those in attendance had taken their departure.

Almost every State and Territory was represented by delegates, the attendance from California being larger than for many years. The general sessions were well attended, and a very lively interest was shown in all the proceedings. The work done in the Sections as a whole was quite up to the average, and that of some was certainly on a par with any society in this country. Many excellent papers were read, and the discussions were always longer than time would permit. This latter fact was very regrettable, for the discussions were undeniably good, and many of the speakers were prominent either as teachers or authors. The general addresses on surgery and medicine, while excellent papers, seemed hardly to come fairly under the head of what one would expect as a general address on these important subjects. The same criticism can be made on this feature as a whole, and it would seem desirable that a new departure was inaugurated. The feature of the meeting was the address on cholera by Dr. Ernest Hart, the editor of the *British Medical Journal*, who was present as a delegate from the British Association. Mr. Hart is a very pleasing speaker, and at the same time his mastery of the subject, with the earnest manner of its presentation, held the unbroken attention of the largest audience present on any occasion during the meeting.

The news that the American Medical Association will meet in San Francisco next year will be a matter of sincere congratulation to the profession on this coast. It will then be twenty-three years since the Association has honored us with its presence; indeed, during all that long period a meeting has never been held in the great West, which seems a *terra incognita* to the majority of the Association. Various causes are ascribed for the comparatively slow growth of the National Association; but we have never heard mentioned one that has undoubtedly some weight in this retardation of progress. For years the Association has held its meetings in a comparatively circumscribed territory, which has consequently been well gone over. Occasionally this has been varied by excursions into new ground, and, we believe, with invariably good results. The argument is made that when meetings are held in places distant from the center of population the attendance will be small, and the revenue will decrease. As a general proposition this is certainly not true; a new locality means new members who only attend because the Association is in their midst, and of this increment a fair proportion will be permanent. We believe that in the past a mistake has been made in ignoring the claims of distant localities. So far from the Association waiting for an invitation from such places it should, from time to time, move into these regions that the profession may realize it is a living entity. The ignorance displayed, even by prominent members of the profession, regarding the great West and its resources, would be amusing, were it not also deplorable. It was frequently stated that a meeting in San Francisco would be a dismal failure; that no one would attend, and that it would be impossible to fill the Sections. To this we have no hesitation in replying that if the officers be present there will be no difficulty in holding a good meeting, with an attendance almost entirely from the Pacific coast. This, however, will not occur. Conversion is rapid, and already many prominent members of the Association have signified their intention of attending. It is as yet too early to speak definitely, but we have no hesitation in prognosticating that the meeting of 1894 will prove, not only one of the most successful, but also one of the largest that has ever been held.

The preliminary arrangements at Milwaukee seem to have been carried out most carefully, and everything passed off in a very successful manner. Great credit is due to Dr. U. O. B. Wingate, the chairman of the committee, for this gratifying result of considerable hard work. There were no hitches of any kind, and fewer complaints than are usually found at such large gatherings. The citizens of the "Cream City" were unbounded in their hospitality, and everywhere the Association was most heartily welcomed. The selection of officers for the ensuing year seems to have given general satisfaction. Dr. Hibberd of Indiana, the President, as will be seen elsewhere may be regarded as a California "pioneer." His election at this particular occasion is, therefore, particularly appropriate.—*Occidental Medical Times.*

**To avoid** duplication of payments or complication of accounts, members are respectfully informed that *membership dues* should be sent to the Association Treasurer, Dr. R. J. Dunglison, Lock box 1274, Philadelphia.

*Subscription fees* from gentlemen not members of the Association, should be sent to this office. Address Journal American Medical Association, 68 Wabash Ave., Chicago.

## SOCIETY NEWS.

**Colorado State Medical Society.**—The State Medical Society held its twenty-third annual session in Denver, June 20, 21 and 22. In attendance, and in the interest manifested, it was the best meeting that has been yet held. The profession of Colorado is earnest, progressive and untiring in the advancement of medical science. The scientific element of the meeting was most marked.

The officers for the ensuing year are as follows: President, Edmund J. A. Rogers; first vice-president, A. M. Bucknum; second vice-president, M. Harrison; third vice-president, Kate R. Lobingier; treasurer, W. F. McClelland; corresponding secretary, A. S. Lobingier; recording secretary, E. R. Axtell.

The election of Dr. Rogers was a most proper recognition of his interest in and work for the society in the past, and as well a fitting rebuke to the method resorted to in the effort to accomplish his defeat. The honors of the society properly belong to those who take such interest in its success that they are willing to give time and money to that end, and who sacrifice personal convenience to their interest in the welfare of the organization.

The most important work of the society, from an ethical standpoint, was the adoption, by a unanimous vote, of the following resolution:

*Resolved*, That the Colorado State Medical Society is opposed to any change in the Code of Ethics of the American Medical Association, deeming any such action at this time to be unwise and uncalled for.

Whether this resolution is in accord with the sentiments that have been imputed to the profession in Colorado in the committee on revision, we neither know nor care. The unanimity of its adoption is an emphatic declaration that in Colorado the vast majority of scientific medical men still regard the practice of medicine as a profession and not a trade, and that they especially oppose those innovators who desire to make the patenting of instruments ethical, and to erase the landmarks that lie between honorable and dishonorable methods in practice.—*Denver Medical Times*.

**Mississippi Valley Medical Association.**—The nineteenth annual meeting of the Mississippi Valley Medical Association will take place in Indianapolis, Wednesday, Thursday and Friday, October 4, 5 and 6, 1893. A general session will be held each morning, and the afternoons will be devoted to section work. There will be three Sections at this meeting, viz.: one on General Medicine, one on General Surgery, and one on Obstetrics and Gynecology, the last-mentioned having been added since the last meeting. An unusually large attendance is expected, in this the World's Fair year. Reduced railroad rates will be provided, further notice of which will be given. Frederick C. Woodburn, No. 399 College avenue, Indianapolis, is secretary.

**Ohio State Medical Society.**—At the last meeting of the Ohio State Medical Society, the following officers were elected: President, Dr. N. P. Dandridge, Cincinnati, O.; first vice-president, Dr. F. C. Larrimore, Mt. Vernon; second vice-president, Dr. W. Caldwell, Fremont; third vice-president, Dr. W. T. Corlett, Cleveland; fourth vice-president, Dr. McCurdy, Dennison; secretary, Dr. Thomas Hubbard, Toledo; assistant secretary, Dr. Graefe, Sandusky; treasurer, Dr. J. A. Duncan, Toledo. Very respectfully,

GEO. E. MALSBARY.

Cincinnati, O., July 13, 1893.

**National Association of Dental Examiners.**—The twelfth annual meeting of this association will be held at the Columbian Dental Club, Chicago, commencing Friday, August 11, at 10 o'clock A. M. The committee on the dental colleges of the National board will meet at the same place August 10, at 10 A. M. Dr. E. Magill of Erie, Pa., is president, and Dr. Louis Jack of Philadelphia is chairman of committee on colleges.

## DOMESTIC CORRESPONDENCE.

### World's Fair.

Dr. J. J. KINYOUN, of the Marine Hospital Service, in response to our request, sends us the following statement of the medical exhibit of the Marine Hospital Service at the World's Columbian Exposition:

The U. S. Marine Hospital Service exhibit is divided into three classes, viz.: The Marine Hospital Service proper, the Quarantine Service, and the Laboratory of Hygiene. In the hospital exhibit are displayed the statistics of the service since its reorganization in 1871, the number of patients treated annually, the statistics of the medical examinations of the Immigration Service, and of the Life Saving Service, and of applicants for pilot's license. The blanks and books, hospital furniture, surgical appliances are shown, such as are now furnished to the twenty-six Marine hospitals and nine National quarantine stations.

The workings of the National Quarantine and Public Health Service are represented by models and the various apparatus in full operation.

A model of a maritime quarantine station is shown, which embodies the latest ideas and improvements in the care of persons who have been exposed to, or are suffering from an infectious disease.

A model of a bath house to illustrate the best methods of bathing persons who have been exposed to the infection of cholera.

Working models full size of steam disinfecting apparatus, both stationary and portable, embodying all the latest improvements, and are designed for use at the quarantine station, for hospitals and municipalities.

Apparatus for generating and applying sulphur dioxide gas is illustrated by a full size sulphur furnace, by which an 18.65 per cent. per volume of the gas can be generated from the sulphur.

Another apparatus, portable, designed for applying liquified sulphur-dioxide to cabins, holds of vessels and rooms, in any required strength.

The internal and inter-State quarantine work is illustrated by a model of a probation camp for the treatment of yellow fever or cholera, and by a model of a disinfecting railway car equipped with all the apparatus and appliances required for such work.

The statistical portion of the quarantine service is shown by consular reports of the vital statistics of foreign cities and seaports and domestic reports, and the "Weekly Sanitary Abstract."

The Laboratory of Hygiene consists of a complete bacteriological laboratory fully equipped with all the latest improved apparatus for investigating subjects pertaining to sanitary science.

In this laboratory, investigations are being carried on, and instruction in any of the several branches can be given to those interested in such work. Aside from this, museum specimens of the different bacteria are shown, together with the various materials, appliances and apparatus required, bacteriological investigations and chemical analyses, etc.

## SELECTIONS.

**Abortive Treatment of Erysipelas of the Face.**—A 1 per cent. etherial solution of sublimate should be used, applied with a small hand atomizer, throwing a forcible spray.

The more forcibly the spray is applied so much quicker will be the recovery, depending of course on the thickness of the skin and the severity of the case.

The small blisters or vesications which the sublimate may cause should not be the cause of its withdrawal, for in the smaller erysipelatous eruptions they should be encouraged rather than otherwise, on account of their beneficial effect.

In applying the spray, the central parts of the inflammatory areas should be only lightly sprayed, but much more thoroughly along the line of demarkation, as well as one to two cm. into the healthy skin. The eyelids should be only slightly moistened. Then apply compresses. One, or two such applications of the sublimate should be sufficient. Those towards the last must be shorter, and parts which have been gone over once should be only lightly touched a second time. Only the boundaries and suspected places on the skin require the more energetic spraying.

Before commencing the treatment the patient should be informed that after every application of the spray he will feel a rather sharp burning pain, but which will not be any more severe than the discomfort caused by the tension of the skin from the erysipelas; also that his face will swell and small blisters or vesicles will form, which might likewise be caused by an erysipelatous inflammation. The crusts should not be removed, but allowed to drop off spontaneously, which process will be hastened by the compresses. By following these foregoing rules, to be sure not all cases can be aborted in a day, but even if a failure, the patient has been benefited, in that the extent, duration and severity of the disease has been materially lessened. The average duration of erysipelas attacks treated by Teichman was from four to five days.—From the *Centralblatt fur Chirurgie*, July, 1893.

**The Sterilization of Ophthalmic Instruments.**—According to the *Medical Press and Circular*, M. Nuel of Liège, France, has reported on the above subject, giving the results of his personal researches. He has found that the use of boiling water has served him as the surest and readiest method in regard to the major part of his instruments. The antiseptic efficacy of thus plunging the articles into boiling water is enhanced if to the water is added some potash or soda, or even common salt. The recommendation of Schimmelbusch is referred to, namely, to use a solution of carbonate of soda in a strength of 1½ to 2 per cent., and this solution is suitable to be used in the cleansing of instruments. The period of immersion may be three or four seconds in the case of cutting instruments, while it should be prolonged to thirty seconds for needles, forceps and the like. The reporter has used a variety of other recommended measures of sterilization, but has given the preference to the boiling water method.

# MISCELLANY.

**Camp Poplar River.**—The abandonment of this military post, which has been in existence for some years at the Fort Peck Indian Agency, was ordered on July 3. The post is situated on a small stream from which its name is derived, about two miles north of the Missouri river, in northwestern Montana. The troops were kept there to look after the Assiniboine and Yankton Sioux. The garrison was always healthy, but presumably none of its members will regret the order carrying them elsewhere, for the surrounding country is bare and uninviting, presenting only a few cottonwood trees in the river bottoms; the buildings unsubstantial and open by many leaks to the intense cold of the Montana winters. In February last the thermometer dropped to —54° F., and the soldiers slept in their buffalo overcoats or passed the night, if particularly cold, in sitting around the barrack room stoves. Dr. J. T. Clarke is the medical officer on duty at the post.

**Calling the Doctor in a Military Way.**—The *New York Herald* states that when medical attendance is required at Fort Wood, Bedloe's Island, a gun is fired and one of the doctors at Governor's Island goes over. In its issue of the 6th inst. it reports that: Two extra guns boomed out from Fort Wood last evening just as the one from Fort William had told of sunset, and the island's inhabitants shook off the air of confident expectation they had worn for some days and assumed instead a knowing look which spoke volumes. Two children had been born beneath Liberty's torch.

**Dr. G. I. Cullen**, managing editor of the *Cincinnati Medical Journal*, has been appointed Asst. Surgeon of the First Regiment O. N. G.

**Dr. Clark Gapen** of Chicago, has been appointed medical superintendent of the Illinois Insane Asylum at Kankakee, vice Dr. S. V. Clevenger, resigned.

**The Kansas Way.**—The following appears at the foot of a billhead of a Kansas physician. It is unique, original and pointed, and we presume effective: "A prompt settlement of this bill is requested. If bills are paid monthly, a discount of 10 cent. is given. Bills not paid promptly will be passed to my attorney for collection. If you pay your physician promptly he will attend you promptly, night or day, rain or shine, while your slow neighbor suffers and waits, as he made the doctor wait, and while he is waiting the angels gather him in."—*Kansas Medical Journal.*

**Max von Pettenkofer's Jubilee.**—A jubilee celebration was given Prof. Max von Pettenkofer, July 1. in Munich, on the occasion of the fiftieth anniversary of his graduation in medicine.

**Prof. Christian Fenger**, formerly professor of surgery at the College of Physicians and Surgeons, has been elected to and has accepted a chair of surgery and clinical surgery at the Northwestern University Medical School. (Chicago Medical College.)

## LETTERS RECEIVED.

(**A**) Atkinson, W. B., Philadelphia; Ayer, N. W. & Son, Philadelphia, Pa.; (**B**) Burford, Wm. B., Indianapolis; Battle & Co., St. Louis; Boylan, H. E., Cincinnati; Bovee, J. Wesley, Washington, D. C.; (**C**) Caldwell, W. S., Paris, France; Chicago Branch, Warner, W. R., Chicago, Ill.; (**D**) Duhring, L. A., Philadelphia; Dubreult, M., Bordeaux, France; Didama, H. D., Syracuse, N. Y.; Duncan, C. H., Bridgeport, Ohio; (**E**) Eastland, O., Wichita Falls, Texas; (**F**) Fowler, George R., Brooklyn, N. Y.; (**H**) Harriman, J. W., Iowa City, Iowa; Hamilton, Alice, Northwestern Hospital, Minneapolis; Hotz, F. C., Chicago; (**I**) Imperial *Granum Co., New Haven; (**J**) Jones, Stanhope, New Orleans;* (**K**) Kimball, H. H., Minneapolis; Kinyoun, J. J., World's Columbian Exposition; Kinney, J. H., Brooklyn, N. Y.; Kellogg, J. H., Battle Creek, Mo.; (**L**) Lamphear, Emory, Kansas City, Mo.; (**M**) Mercer, Alfred, Syracuse, N. Y.; Malsbary, G. E., Cincinnati; Milbourne Advertising Bureau, Philadelphia, Pa.; McKesson and Robbins, New York, N. Y.; McMurtry, L. S., Louisville, Ky.; (**N**) New York Pharmaceutical Association; Niles Advertising Agency, Boston, Mass.; (**P**) Palmer, Edgar, LaCrosse, Wis.; Patterson, R. S., Port Huron, Mich.; Parke, Davis & Co., Detroit; Phillips, Chas., Chemical Co., New York, N. Y.; Pusey, Wm. Allen, Chicago; (**R**) Reynolds, Dudley S., Louisville, Ky.; Reyburn, Robt., Washington, D. C.; Reed, R. Harvey, Mansfield, O.; Rennolds, H. T., Baltimore; (**S**) Stewart, F. E., Watkins, N. Y.; Stearns, Frederick & Co., Detroit, Mich.; Shiddler, G. W., Cincinnati; (**T**) Taylor, J. M., Kirkwood, Ga.; Tuttle, A. H., Cambridgeport, Mass.; Tracy, Edward A., Boston, Mass.; The Trommex Extract of Malt Co., Fremont, Ohio; (**W**) Warner, W. R., Philadelphia, Pa.; Webster, Geo. W., Chicago; (**Z**) Ziegler, J. L. Lancaster, Pa.

# THE PUBLIC SERVICE.

**Army Changes.**—Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 8, 1893, to July 14, 1893.

Capt. Freeman V. Walker, Asst. Surgeon, the order assigning him to temporary duty at Ft. Trumbull, Conn., is so amended as to relieve him from further duty at Ft. D. A. Russell, Wyo., and to assign him to station at Ft. Trumbull, Conn., until further orders.

First Lieut. Charles F. Mason, Asst. Surgeon, promoted to be Asst. Surgeon, with the rank of Captain, July 2, 1893.

Major James P. Kimball, Surgeon, is relieved from duty at Ft. Clark, Tex., to take effect at the expiration of his present sick leave of absence, and ordered to Ft. Marcy, N. M., for duty.

Capt. William H. Corbusier, Asst. Surgeon, is relieved from duty at Ft. Wayne, Mich., and ordered to Ft. Supply, I. T., for duty, relieving Major Paul R. Brown, Surgeon. Major Brown, on being relieved by Capt. Corbusier, is ordered to Ft. Hamilton, N. Y., relieving Major Ezra Woodruff, Surgeon. Major Woodruff, on being relieved by Major Brown, is ordered to Ft. Keogh, Mont., for duty, relieving Major William H. Gardner, Surgeon.

Major William H. Gardner, Surgeon, on being relieved by Major Woodruff, is ordered to duty as attending surgeon and examiner of recruits at Hdqrs. Dept. of Dakota, St. Paul, Minn., relieving Capt. Walter Reed, Asst. Surgeon U. S. A. Capt. Reed, upon being relieved by Major Gardner, is ordered to report to the Surgeon General, at Washington, D. C., for duty as curator of the Army Medical Museum, and as professor of clinical and sanitary microscopy in the Army Medical School.

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## ORIGINAL ARTICLES.

### BRAIN SURGERY, WITH REPORT OF NINE CASES.

Read in the Section on Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

BY F. C. SCHAEFER, M.D.
Prof. of Clinical Surgery, Northwestern University Medical School; Prof. of Surgery, Woman's Medical College; Surgeon to Wesley Hospital, Chicago.

My subject might perhaps have been named more appropriately cranial surgery, as I wish to report nine cases of injury to the head; all of them, however, interfered with the function of the brain, and in three of them there was actual destruction of brain tissue. Of these nine cases, four recovered completely, one improved so much, that we have reason to believe that he will in the course of time, recover sufficiently to be of some use to his family. Four died. As we have yet much to learn concerning the diagnosis and management of injuries to the head, and as all of them have their own peculiarities to a certain extent, it seems to me an accurate report of such cases will be of advantage to us; and undoubtedly we will have to depend largely upon clinical experience for the advancement of this work in the future. This, then, is my apology for occupying your valuable time:

*Case 1.*—Boy aged 10 years, fell during February, 1880, from a depot platform, striking his head against the corner of a fire-box of the wheel of a freight car. I saw him an hour later; he was in a comatose condition, motionless with a large, full, slow pulse, and sterterous breathing. There was an extensive contused and lacerated wound of the scalp, over the middle portion of the right parietal bone exposing the skull. After thoroughly cleansing the wound, having shaved the hair from the scalp, I enlarged the opening and found a depressed, stellate fracture. The skull was unusually thick for a boy of his age, 3-16 inch. The fracture presented five points at its center, all coming together, converging like the spokes of a wheel, at the center of an irregular circle two and a half inches in diameter. There were therefore five irregular triangular pieces of bone. Each triangular segment was attached at its base, but all of them had their outer table cracked where they joined the body of the bone. Their apices were depressed fully a third of an inch. In order to elevate the pieces I trephined through the base of one of them, then succeeded readily in replacing all. The dura mater was contused, cerebral pulsation absent before the operation. Restoration of the bone to position was followed by immediate return of functional action. The little fellow talked freely and told how he fell. The scalp was stitched with silk, dressed antiseptically; the patient was left in bed, in a quiet room for about ten days. The wound healed by first intention. The button of the bone was not replaced. The boy is well.

*Case 2.*—Boy 7 years old, October, 1889, fell from a loft in a livery stable, striking upon a heavy plank floor with the back of his head. Was carried home in an unconscious condition; saw him an hour and a half later. His pulse was full and large, 68. Breathing sterterous; pupils dilated. There was a large swelling over the occipital bone above the superior curved line, extending two inches to the right and one inch to the left of the occipital protuberance. The scalp was severely bruised and raised by a hematoma. Anæsthesia was unnecessary. I cut through the scalp and periosteum making a curved incision two inches long with its convexity downwards. The blood immediately rushed out; the patient moved his limbs at once, gave a cry and waked up as from a dream. I quickly examined the skull and found a transverse crack two inches long, about half an inch above and running parallel with the deep curved line of the occipital bone, extending more to the right than left side of the median line. The thin bone had been depressed by the blood between it and the periosteum, and had sprung back into position when that pressure was removed.

Ten minutes after the operation the boy related how the accident occurred. Within a week he was again playing upon the street.

*Case 3.*—Wm. —— aged 11 years, while visiting in the country a hundred miles from Chicago, July, 1887, fell from an apple tree a distance of twelve to fourteen feet. His father having been telegraphed for, came to have me accompany him to see his boy. Not finding me at home, he took another surgeon with him. The city surgeon arrived at the patient's bedside ten hours after the accident occurred. In the meantime, the mother who was with the boy, called a local doctor who found a large oval swelling in the left temporal region, together with contusion of the scalp here. The boy was unconscious. The physician said he was suffering from concussion of the brain; did not think there was a fracture. The Chicago surgeon agreed with the attendant, concluded that there was nothing to do except to let him rest and applying a liniment to the wound, returned home. The patient remained unconscious for forty-eight hours, then becomes semi-conscious; at the end of a week he "woke up" as his mother said. During this week his bowels were constipated, and urine had to be drawn. After six weeks the child was brought home and I was called to treat him for a headache. At this time a ridge could be plainly felt in the middle of the fossa of the squamous division of the temporal bone, running parallel with the zygomatic process. What a chance the surgeon missed here of making a brilliant cure with one stroke of the knife! Undoubtedly the large swelling in the region was caused by a rupture of one of the deep temporal arteries or from the bone. The blood was boxed in by the unyielding temporal fascia and pressed the cracked bone against the dura mater and brain. The pressure symptoms disappeared with the absorption of the clot, the bone retaining sufficient elasticity to spring out. At the time of my visit, the child was afflicted with a slight frontal headache and enteritis; the parents imagined that the injury might have had some relation to this condition, which fortunately proved not to be the case, as he made a prompt recovery.

*Case 4.*—A gentleman aged 45 years, engineer, was found lying on his back on the floor, in close apposition to the cube-shaped stone supporting a portion of a stationary engine, with a step ladder standing near. He was unconscious when a homeopathic physician came to see him. He was placed upon a stretcher, and examined by the doctor who found a scalp wound one and a half inches in length over the right half of the occipital bone, which he washed, stitched and dressed. The patient was taken home and looked after by this physician. It happened that this man carried an accident insurance policy, and in the natural course of events the insurance company sent their surgeon to look after the interests of the patient, or more properly stated, their interests. The company's surgeon called twenty-four hours after the man was sent home. Not knowing who or where the attending physician was at that time, he asked permission of the man's wife in behalf of the company to see the patient. The permission was granted. The doctor quickly examined the case. Found pulse 48 large, full, laborious. Pupils dilated widely. Sterterous breathing. The bladder filled to distention. He did not stop to open the bandages, but at once drew off a quart of urine from the bladder, and went in search of the doctor. Did not find him until the next day. On the fourth day the company's surgeon suggested a consultation be held with a regular surgeon, promising that the company would bear the expense. The attendant was willing to have a homeopathic surgeon. In order to pacify him the company's physician said, you may have your homeopath, but let me bring a "regular surgeon" and the company will pay both. He finally consented to let the company's doctor bring a surgeon to see the case with him. The doctor called me on the sixth day; I found a pin head opening in one end of the scalp wound, through which my probe entered readily, and I felt the rough outlines of a fracture. Gave it as my opinion that there was either a clot or depressed bone causing the symptoms. The homeopath's attention was called to it, but he claimed that there was no fracture and held a consultation with one of his guild, who agreed with him. The man's wife said she wanted her husband let alone with her homeopathic doctor and wanted no more physicians to trouble him. Of course I advised operation, but at the same time was guarded as to the prognosis, saying the clot might be absorbed, or possibly the bone might spring back into position and the patient make a recovery. If it was a clot there would be more hope, but it would take considerable time. In the meantime, however, I felt he was being permitted to take too great a chance. Be that as it may, two weeks later Dr. J. R. Corbus (who represented the company) said that the patient seemed to be gradually improving, although his urine still had to be drawn. Six weeks later was able to sit up. His right eye was much weaker than the other. In fact he could not see clearly with it. Motion in one leg was somewhat impaired. After six months he began to walk about, toes of one foot dropped, causing a stumbling motion. The case came to court within a year, as the company refused to pay the homeopathic attendant, claiming that an operation would have resulted in a more rapid cure and that they had been compelled to assume a greater risk than was necessary by the refusal to have proper surgical aid. The attendant made his speech claiming to have cured the patient medically, while Surgeon Schaefer wanted to use the knife. Dr. J. R. Corbus being called to witness stand, was asked what he thought about the case. His reply was: "By the grace of God the patient got well, homeopathy notwithstanding."

*Case 5.*—A Mr. T. aged 50 years, manager of railroad car shops at the city limits of Chicago, rode home in the baggage car of an express train, as was his wont, at six o'clock one July evening of 1890. The rails spread while the train was in motion. The gentleman had been sitting in an arm chair, facing the corner of a safe, perhaps a yard distant. As the car left the track he was thrown forward from the chair and struck the corner of the safe with his forehead. The accident occurred about seven blocks from the man's home. He was momentarily stunned, but soon picked himself up and walked home unattended. I saw him an hour later in emergency. His left eyelid was black and swollen. It was seen that the frontal bone was fractured vertically in its left half, from near the inner end of the orbital arch upwards. The left side of the forehead was flattened. He had an unusually large frontal sinus, which made the wound look as if the anterior wall of the left sinus was pressed in. As the man was perfectly rational, showing no symptoms whatever of brain disturbance, it seemed altogether probable that the outer table only was broken. Still I was in favor of cutting down immediately to examine the bone and do what might be necessary. The family were opposed to such action. It was therefore deferred. The next morning a consultation of surgeons was held. The patient was still rational, clear headed, having use of all of his functions, with no indication of compression. Six days later I was invited by the surgeon in charge, my friend Dr. L. McArthur (by whose consent I report this case), to assist in elevating the bone. A change had occurred on this day. His speech was faltering, deglutition difficult, pulse weakening. He was somnolent. An incision revealed the following:

There was a vertical fracture towards the inner end of the left orbital arch extending towards the coronal suture. The external angle of the frontal bone was broken loose from the malar articulation, while this angle had been driven inwards two-thirds of an inch or more. With great difficulty Dr. McArthur pried the angle back into position. Of course this depression implied a fracture of the orbital plate of that side. Two days later I made the autopsy and found what the illustration shows. A transverse fracture extending from the external process of one side to the other, *across the base of the skull*, passing through the orbital plates near the lesser wings of the sphenoid and through the back part of the cribriform plate of the ethnoid. Connecting the ends of the fracture there was a complete fracture of the vertical portion of the frontal bone running parallel with the coronal suture. In addition to these, there were the vertical fracture alluded to connecting with the transverse fracture on the forehead; and three fractures through the left orbital plate, two extending from orbital arch to the transverse fracture within the skull, the other half way back. The triangular shell thus produced at the outer angle of the frontal bone was driven almost an inch into the left frontal lobe. Here the autopsy revealed a large cavity in the brain which had been occupied by the bone. There was a clot in the channel of the cavernous sinus. With this extensive traumatism there were no symptoms of brain injury present until the sixth day.

*Case 6.*—Boy, W. L., aged 17 months. While playing upon the porch at the back end of a flat, sixteen feet above the ground, suddenly fell down stairs, probably rolled two or three steps, fell seven feet striking the top of a fence with the crown of his head, and dropped from the fence to the ground below five feet which was covered with ice. There he was found a half minute later, lying flat upon his back and head. He was carried to his bed, and a messenger sent for me. A physician happened to be in the building at the time. He was at once called; after looking the child over concluded he was suffering from concussion of the brain. A half hour later I came to him. Examined the child critically. Found he could move his limbs. His pupils responded to the light slowly. For one instant only his left eye was thrown off of parallelism with the other. It quickly moved into line, however. This at once made me suspicious of brain injury. I then ran my hand over the top and back of the head. The occiput was flattened, while in front of it there was a prominence. The child was drowsy, still could be easily awakened, and had control of its functions. I next walked out to the porch to see how far and where the boy ell. The extent of the fall was so great, that I felt convinced that the skull must be badly fractured. In the absence of grave pressure symptoms, it seemed unnecessary o operate at once. I therefore advised warm fomentation and sedative treatment. Gave it as my opinion, that the kull was extensively fractured and said that at the first instant when severe brain symptoms appeared, such as convulsions or paralysis, I would cut through the scalp and do what seemed best. Twenty-four hours later there occurred clonic spasms at the left angle of the mouth. I at once ordered a barber to shave off the hair preparatory to operation. Chloroformed patient; scrubbed head with soap and water; washed with bichloride and ether. Cut through he scalp at a point corresponding to the upper portion of right fissure of Rolando; found an irregular fracture extending to the right and left; followed it up in both directions. It extended to within one-half inch of the right ear, and to within one inch of the left ear running across the back part of both parietal bones. A peculiarity which interested me greatly was the fact that the borders of the broken bone were separated *one-eighth of an inch* which explained to my mind the absence of pressure symptoms from the beginning; the open seam of necessity increased the intracranial area. At the back part and middle the bone was considerably depressed for distance of two inches; at the right side in front of the location for the fissure of Rolando I trephined and found a tablespoonful of clotted blood beneath the dura mater, which membrane was lacerated here. The dura mater was torn in several places and at the middle of the wound, brain tissue lay loose on the seam of fracture. After thoroughly cleaning the entire wound I lifted up the depressed bone, stitched the dura mater, brought the edges together through the entire length of the wound, placed a small drainage tube in two places which were carried through small trephined openings of the skull. Dressed antiseptically. Boy's eyes brightened, responded quickly to light. Improved for twenty-four hours, when his pulse and temperature rapidly crept up and he died on the fourth day, of meningitis.

*Case 7.*—Wm. N., aged 22 months. Was called to treat this child for a headache in the evening of the fifteenth day. His parents said that he had been sick for about two weeks; the headache came every afternoon at about 2 o'clock, and left him towards midnight. The pulse was small and rapid, 120; temperature 100°F. Eyes responded to the light. The head ached all over the frontal region. Tongue heavily coated. Nothing was said about traumatism. Bowels were constipated. Prescribed bromides, cathartics and quinine. Called the next day at 7 o'clock P. M., found the patient feeling better, pulse a little stronger. Temperature 99° F. Continued bromide of potassium. Third visit, fourth day, 9 A. M. He was slumbering; every now and then he cried out in his sleep. The cry was shrill, as if caused by sharp pain. This set me to thinking. I at once asked the parents if their son had met with an accident recently. They thought not. I asked the question again, saying little ones frequently stumble and fall. The mother then spoke up saying that she remembered that he fell about two weeks ago, but there was no bruise upon him. My next question was who saw him fall? "Freddie, his 12-year old brother." The brother was called. In reply to my question he said that he played with the patient two weeks before, his brother clinging to his neck and back while he sat on the edge of a lounge; he ducked his head pretending to throw him over his head; did this once too often when the latter slid to the floor head first, striking heavily upon the cranium. This was sufficient. I examined the skull carefully, found a very slight unevenness over the coronal suture of the left side of the head, scarcely perceptible; pressure upon the point caused him to cry the same shrill cry as heard before. Pressed upon a corresponding point of the opposite side but elicited no response. There was no longer any doubt in my mind as to the cause of the origin of the headache.

I immediately informed the father that an incision through the scalp was indicated, to explore the skull and possibly to lift a depressed bone. The father at once repelled the idea, claiming that the child had the headache nearly a week before the accident occurred. Having no time to waste, I advised him to call in another surgeon, and if the latter should agree with me I would go on with the operation; if there was a disagreement he could let the other surgeon take the case. Two surgeons were called, Dr. I. N. Danforth and Dr. McDonald. After hearing the full history of the case and having examined the head, they concurred with me. By this time the boy was very weak; pulse 130, small, temperature 101°. In the meantime the head had been shaved by a barber. I cleaned the scalp and cut down to the bone, making an oval flap. Found a slight fossa at coronal suture, an inch to the right of the median line; the teeth of the suture could be seen obliquely placed. Removed a ¾-inch button. The cerebral pulse was absent. The dura mater looked black. Aspiration drew off a teaspoonful of serum. Opened the dura mater; a tablespoonful of cerebral fluid escaped, with considerable lymph and clotted blood; pulsation was now normal. There was a circumscribed leptomeningitis present. It was thought advisable by all of us to leave a small gauze drain in the wound. I stitched the dura mater and scalp with fine silk; applied usual antiseptic dressings. The headache was relieved; patient's eyes grew clearer, responded promptly to the light. After thirty-six hours his temperature ran up to 102° F.; two days later he died. There was no pus in the wound. He died of leptomeningitis.

*Case 9.*—Wesley Hospital Record.—Mr. K., aged 47 years. Father died of apoplexy. Mother lived to old age. Lost a sister aged 30 years from consumption. He enjoyed good health up to two years ago. During the fall of 1887 he was sand-bagged and robbed on the street while going home in the evening. Was struck on the head with some metallic instrument. The scalp was torn open to the extent of about an inch, over the upper and middle part of the right parietal bone, extending outwards from near the median line. He was stunned for a few minutes only. The wound was dressed by his wife; it healed in a few days. The patient went to work the morning after the accident and felt as well as usual, barring a little tenderness about the wound. He had forgotten all about this important incident until reminded of the presence of a scar upon the scalp. Two years ago his limbs swelled and a physician said he had Bright's disease. At the same time his head troubled him. Was afflicted with vertigo. There was a constant headache and tenderness on the right side of the skull. After a few weeks of suffering he was suddenly seized with "spasms" of the left side of his face and of the left arm and leg. These spasms began in the left fingers, extended up the arm to his shoulder, next over the entire left leg. His head turned to the left side, and there was a constant twitching at the left angle of the mouth. Lost the use of his limbs for several days after the attack. Could not talk well afterwards; his memory became impaired and sensations were dull on the entire left side from that time on. The convulsions came five times—several months apart—within two years. Each successive paroxysm was longer and more severe than the preceding one. Had the last attack of the five before entering the hospital a few days before Thanksgiving, 1892, at which time he was almost comatose for thirty-six hours. Since coming here, December 21, 1892, the convulsive seizures have occurred on an average about once in twelve days.

*Symptoms during the Seizure.*—Clonic convulsions beginning in the second finger of the left hand. Immediately after the "initial" symptom appeared in the finger the convulsions extended to the other fingers, wrist, arm and shoulder in rapid succession, also to the muscles of the face and leg. Teeth came firmly together, causing a "gritting" movement; several times the tongue was bitten. These symptoms of irritation were followed by a period of unconsciousness and hemiplegia, the unconscious state lasting from a few hours to a day. The paralysis only partially disappeared. The limbs could be moved, although he had little use of them. The left hand was closed most of the time; with a little effort he could open it. Hand pressure was very weak compared with the right one. Upon waking he looked dazed. There was almost complete hemianæsthesia, and a constant twitching at the left angle of the mouth; also ataxic and amnesic aphasia. Memory greatly impaired.

*Status Presens.*—Before operation made the following notes: Is in fair flesh. Presents a "nervous look." Has partial hemiplegia of the left side. Drags the left leg while walking. Carries his left hand closed. Muscular power greatly diminished. Pressure with left hand very feeble. There is limited motion of the left arm. Can lift it to the horizontal with shoulder, slowly; left hand opens halfway slowly. There is almost complete loss of general and tactile sensation. Hemianæsthesia may be said to be almost complete. Is unable to tell which finger or toe is being pricked with a pin. Does not feel it about the face. Our interne, Dr. Boomer, stuck a pin almost through the lobe of the left ear and the patient gave no evidence of having felt it. Touch any portion of the left half of the body and extremities with bottles of hot water, he takes no notice of the heat. A snowball was placed against his left arm, leg and face without his knowledge; he remained ignorant of its presence. Can not add a column of six simple numerals. Does not know the value of the figures. Does not know when he had the last convulsion. Can not remember when his wife called to see him last, although she was here yesterday. His vocabulary is limited. Is afflicted with both amnesic and ataxic aphasia. Speaks a word hesitatingly; seems too tired to speak another; shakes his head; evidently can not think the word. Can not write a connected sentence of five words. Drops one or two words in the effort. L. E.—fundus very much congested; V. 20-60. R. E.—V. 20-20.

On presenting this patient before the class I said the localization symptoms of irritation and of partial destruction are well-marked. There are the local headache, tenderness and pain; the "signal" symptoms as first noticed by his wife, in the left middle finger, followed by clonic convulsions of successive groups of muscles; the hemianæsthesia; tremors at the left angle of the mouth; tetanic contracture of the left levator orbicularis and of the platysma muscles; also the hemiplegia of the left side pointing directly to the right side of the brain as the location of the *fons et origo* of the man's condition. Reading these symptoms in the light of modern pathological knowledge we may feel absolutely sure that there is a lesion about the cortex of the brain corresponding to the right motor area, as mapped out by Ferrier and Horsley.

The history of the case points to traumatism as the origin—causing inflammation, infection, or both, with their sequelæ. There may have resulted thickening of the bone; possibly a splinter was driven into the brain from the inner table and has led to the formation of a local abscess. There is the possibility of a blood clot alone, or as a complication of the conditions already mentioned.

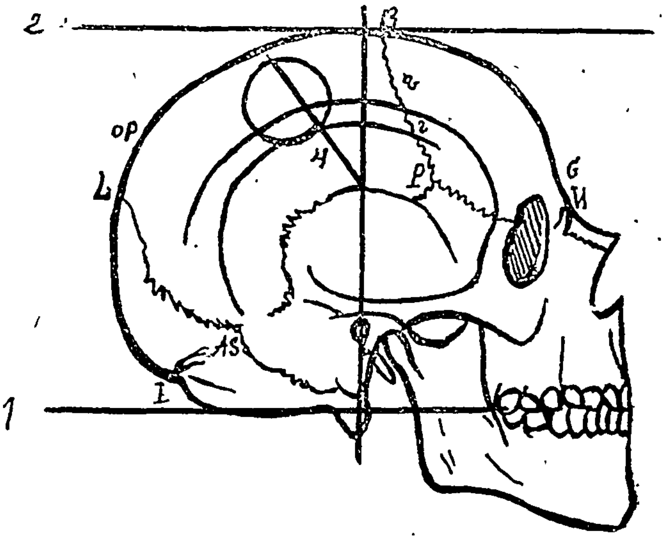


Fig. I.

1. Base line.
2. Parallel tangent line.
3. Bi-auricular.
4. Fissure of Rolando.

The circle represents trephine ring, button within.
N. Nasion.
G. Glabella.
I. Inion.
B. Bregna.
S. Stephanion Superior.
S. " Inferior.
P. Pteryon,
O. P. Occipito Parietal fissure.
L. Lambdoid suture.

The patient's head had been shaved and thoroughly scrubbed with soap and water and washed with a bichloride of mercury solution, 1 to 2000. I now took the measurements for locating the fissure of Rolando. My method is to project a base line from the crown of the teeth of the upper jaw backwards, which will cross below the mastoid process on a line with the condyles of the occipital bone. Next a vertical line was carried at right angles with the base line (see Illustration 1,) upwards through the middle of the auditory meatus to the top of the head and parallel with the base line. At a point 6 cm. above the middle of the auditory meatus made a dot with tincture of iodine; from this dot carried a line obliquely backwards and upwards at an angle of 33 degrees with the bi-auricular line

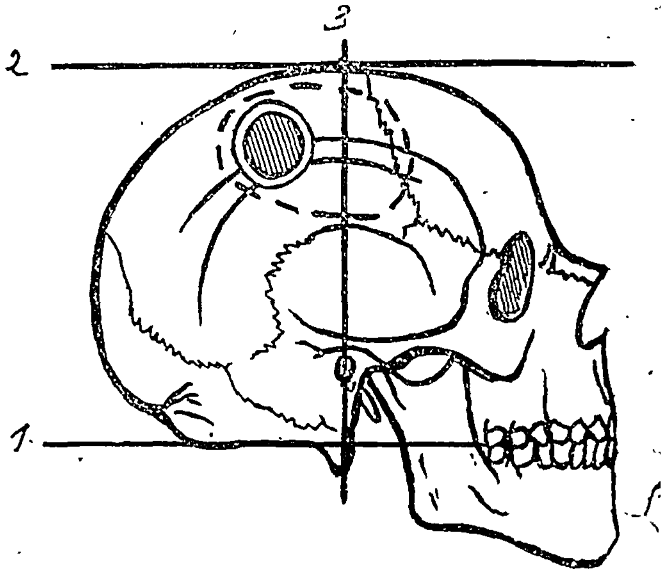


Fig. II.

1. Base line.
2. Parallel tangent line.
3. Bi-auricular line.

Circle indicates opening into skull.

Broken line of the oval indicates the area of adhesions, and bounds the space occupied by the blood clot, beneath the dura mater.

thus. Marked out, *approximately*, the course of the fissure of Rolando. Having mapped out the fissure we again washed the scalp thoroughly. Before cutting through the scalp I pierced it with a drill and marked the line for the central pivot of the trephine. To prevent hemorrhage the lock stitch devised by my friend, Dr. Frank, was used. With the stitch I cut off from the circulation an elliptical area measuring 12½ by 10 cm. (5 by 4 inches). Within the area I cut down through the scalp and periosteum, making an oval flap 6 cm. wide, and lifted it up from behind forward to the extent of 7 cm., (2 4-5 inches), leaving the base of the flap in front; thus the opening in the scalp was placed at the most dependent portion. The flap was held back with warm sterilized gauze by Dr. Cullen, our interne. I now placed the trephine upon the skull so as to cover the fissure of Rolando, but had it extend further back of the fissure than forward, so as to get nearest the point in the skull covered by the scar in the scalp. The trephine was one and one-half inches in diameter. The bone was quite dense, five-sixteenths of an inch thick. The sclerosed condition of the bone was evidently due to osteitis. The dura mater was crossed by several large veins, and bled readily on being touched. After passing the needle through the dura mater, a half teaspoonful of blood entered the syringe. Finding nothing between the dura mater and calvarium to account for the man's condition I tied the veins and cut the dura mater one-fourth of an inch from the margin of the opening, and carried the incision around three-fifths of the circumference of the ring. The membrane was very thick and cut like leather, presented a yellowish appearance. A blood clot now came into view—it was semi-liquid.

By inclining the head to the right side, we caused the clot to glide out; the quantity was about two tablespoonsful. There was considerable lymph in the arachnoid membrane all over the exposed surface. My index finger passed readily under the cranial vault and was swept about its circumference two inches forward and downward, an inch backward and half an inch inward to the longitudinal sinus. Around the entire area there were adhesions present showing that there had been at least a localized meningitis here and probably a leptomeningitis. The arachnoid could not be separated from the pia mater. Looking closely at the exposed surface the membranes were as one, thickened by lymph deposits. I tore the adhesions asunder between the arachnoid and dura mater by *very gently pressing* against them, the force of the pressure being directed towards the outer membrane. No hemorrhage worth mentioning followed this procedure in the present instance. My fingers were a little blood-stained. I explored the brain farther with the needle. It descended into the ascending frontal convolution towards Broca's speech center. Only a little brain substance entered it. Pierced the posterior portion of the ascending parietal convolution, behind the fissure of Rolando and above it. Noticed the patient's left leg jerk as the needle entered the cortex. The needle next entered directly behind (or as nearly as one could compute) the Rolandic fissure near the hand and finger centers. There was no evidence of abscess in any of these points; hardly felt justified in exploring farther in the presence of the pathological conditions already found. Washed the exposed parts with sterilized water, using very little pressure with the syringe, having first surrounded the tissues involved with sterilized gauze sponges to prevent the water from pouring into the subdural space beyond the limit of disease. There was a dark appearance of the deep membranes in spots, probably due to deep congestion of the pia mater, and the brain seemed to yield more readily to pressure here as if it was a little softer than in other parts.

As the vessels of the pia mater dip into the brain, the presence of softening of the brain would not be surprising. Leptomeningitis is said to be a cause of such a pathological condition. Had I been confident that the brain tissue had undergone degeneration it would not have seemed justifiable, in the face of what had already been done, to extirpate it. Removal of it would have produced permanent monoplegia. Not knowing what nature might accomplish by the regenerative process it seemed wise not to disturb it. I proceeded to close the wound, by first stitching the dura mater with catgut, in continuous suture, leaving a small opening at the lowest part for drain and insert a small drainage tube, having chiseled a groove in the margin of the button and taken out a few chips of the parietal bone directly opposite to prevent pressure on the tube. The button of bone was replaced. The scalp was stitched with silkworm gut, an opening being left at the lowest portion for the drainage tube. I now removed the lock stitch. Next dusted iodoform over the scalp wound, covered the head with two layers of iodoform gauze, four layers of sublimate gauze, placed a thick layer of cotton around the entire head and a Moorish bandage or cap over all.

NOTE:—Feb. 21. The patient lifts his left leg and bends the knee while walking. Before the operation he dragged the leg. The twitching at the left angle of the mouth ceased three weeks ago. General and tactile sense partially restored. Says he feels his left arm and leg, as if there was life in them; they seemed dead before. Can recognize which finger is touched with a point of a pin, without seeing it. The ear is sensitive to the touch. Headache has left him. Talks better, frequently speaks a sentence of a dozen words. Sometimes the words come smoothly and rapidly, at other times somewhat hesitatingly. Brain tires easily. An hour and a half after the operation was completed he said, "Doctor, can't you shut off that man's whistle?" referring to a patient in an adjoining room whose whistling annoyed him. The words were spoken distinctly and with little hesitation. Two weeks ago he could not open the left hand or lift the fingers. Now he opens the hand widely and extends the fingers. Has had no convulsions. Is improving daily. I omitted mentioning that our patient took iodid of potassium up to two weeks preceding the operation to make sure that no error should occur in operating. There was no indication of syphilis and the history of traumatism had not been ascertained. As already mentioned, the gentleman said nothing about the injury to the scalp until it was discovered by ocular and digital examination, and his attention was called to it.

Feb. 29. Had bone ache; bone was tender. There was evidence of necrosis. I opened the wound, removed the button, and chiseled away small bits of bone. March 31. Had a convulsion. Reopened the wound and removed a semicircle of dead bone about the cranial opening. There were adhesions behind the dura mater and arachnoid. For a time he seemed to improve again. April 6, while telling some of his friends that he felt better than he had for years, he was taken suddenly with epileptic seizures. They recurred daily. On the 11th of April I opened the wound once more, hoping to find a removable cause for the convulsions. Found adhesions to the dura mater and softened brain tissue, with two small abscesses of the size of pea. Died April 16.

Autopsy revealed extensive area of softened brain tissue, with two small abscess centers the size of a pea, and the dura mater re-attached. For at least one inch below and back of the trephine opening the bone was one-sixteenth of an inch thicker than that of the opposite side.

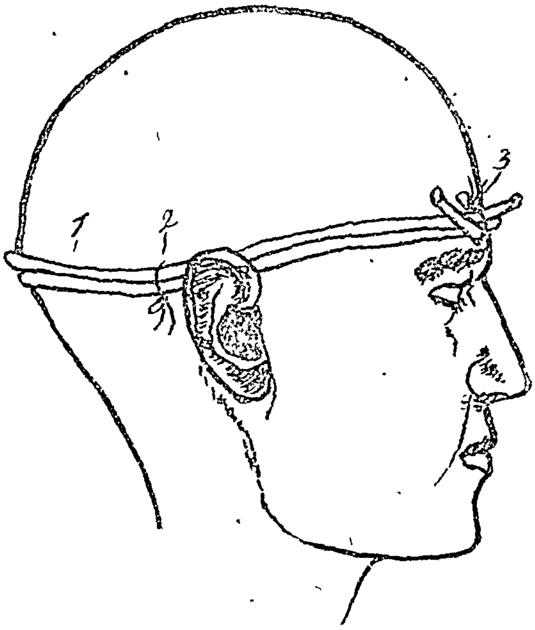
*Case 10.*—729. Wesley Hospital Record. Admitted March 20, 1893. Mr. W., aged 52 years. Has always been well and hearty. A locomotive engineer by profession. Eighteen months ago was badly hurt in collision of electric cars. Struck the side of his head against a door jamb. Six hours later, in the night, while drinking a little water fell to the floor unconscious and paralyzed. Next morning consciousness returned, but he remained hemiplegic. Was aphasic four months. Remained in bed nine months. Has imperfect motion and loss of muscular sense in the entire left side. General sensation greatly impaired. Is troubled with insomnia. The right parietal bone feels somewhat flattened, as if it was stove in.

*Notes taken before operation:*

Left hand assumes silver fork position, with excessive extension of all the fingers. Can be about one-third way closed. Can not bring the ends of fingers within five inches of the palm of the hand. Raises the left arm to an angle of about 30° with the side of the chest. Forearm in extension forms an angle of 15° with the humerus. Rises from the chair slowly, with difficulty and trembling, using his right arm as a prop on the arm of the chair. Can not stand erect; body leans forward at the pelvis so as to form an angle of 15° with the thighs. Left shoulder droops three and one-half inches. While sitting he can with the aid of the right arm carry the left leg over the right knee by making repeated efforts. Patellar reflex is exaggerated. On closing his eyes while standing his body oscillates and he fears falling. Can not walk a step without strong support, and never has done so since receiving the stroke. He moves his leg with great difficulty, leaning upon the shoulder of an attendant. Does not bend the knee, but drags the leg. Walks on the outer side of the foot. His knees jerk occasionally when he tries to walk. Left ankle is weak and turns easily. General muscular tremors noticed after standing five minutes; more noticeable on the left side. Has imperfect control of the urine; urinates three or four times at night. Micturition variable during the day time. Experiences difficulty in passing urine; may take two minutes to start it, and can not be controlled at will. Bowels move with difficulty. Tactile sense dull; can not distinguish between two points unless they are two inches apart, and then is not certain. Distinguishes heat and cold with difficulty on the entire left side of his body, face and limbs. Pin points applied to the left foot and leg cause reflex jerking, although he hardly knows what troubles him. No cremasteric or elbow reflex elicited. Left arm and leg are stiff; they bend with difficulty, especially the arm. Nearly all of the muscles are contracted, the extensors most severely. He cries easily and is very irritable.

On the 13th of April, after having the patient most thoroughly prepared, I cut through the scalp, making an oval flap as usual, so as to raise it from behind and below; lifted the periosteum with it. Found the parietal bone depressed near its center. With Roberts' trephine modified, one and one-half inch diameter, I sawed out a button. The dura mater was quickly exposed. The skull was only a trifle over one-eighth thick and quite elastic. It was not broken, but simply bent in like the side of a battered stove pipe. There was no cerebral pulse apparent. All around the border of the opening just made the bone could be seen curving in and pressing upon the dura mater. The latter at once raised up to the level of the external surface of the surrounding bone. The elevator could not bring the edges of the bone away from the dura mater sufficiently, so I deliberately enlarged the hole in all directions, perhaps one-eighth of an inch, and again pried the bone with elevator. Was now rewarded with restoration of pulsation, which the members of the class noticed distinctly at the distance of eight feet. There was no bleeding during the operation. My plan[*] of constricting the head with a double circle of one-third inch solid rubber cord tied with stitches to the scalp at two places worked admirably. There was, however, free hemorrhage after the constrictor was removed, largely from the bone. The wound was stitched with silkworm gut. It healed promptly. The day after operation he closed his left hand firmly, and pressed mine with force. A few days ago the gentleman left the hospital greatly improved. Our interne, Dr. Seymour, took the following notes May 27:

Can close his left hand completely and gives a strong grip with it. Can touch both ears and top of his head with the left hand. Can straighten out the left foot and extend it. While lying in bed can flex the left leg at the thigh and knee. Walked to the front door and back (100 feet) without the assistance of even a cane; getting up and sitting down alone. Sways a little when standing with eyes closed. Stands nearly erect. Can raise arm at the shoulder to right angle with the body. General and tactile sense greatly improved, but not perfect. Talks more fluently; his words are uttered with more force. Is less emotional and has better control of his temper. Has control of sphincters. Discharged greatly improved May 27. Advised massage treatment and electricity for the muscles, which I believe will in time enable him to go to work.



[*] My method of controlling hemorrhage in operations about the head is here shown. A firm solid rubber cord, one-fourth to one-fifth of an inch wide (1), is wrapped tight about the head twice. The cord is not tied into a knot, but the ends are crossed in front and tied together with a heavy silk thread placed around them (3). The thread sinks into the cord sufficiently to keep the ends from slipping. The cord is held in position by means of two or more suture threads. These are placed in position by means of a curved needle, which is passed through the scalp under the cord. They are then tied around the cord as in illustration (2). Two or more of these loops may be used at different points.

### *Discussion.*

**Dr. McRae** of Atlanta, Ga.—These injuries are so frequent that we all meet them, and it is our duty to operate in every case. I recently had two cases which exemplify this. One was an injury the result of a fall from a horse, which caused a triangular depression on the top of the head. I never saw such violent hemorrhage from a fracture of the skull as occurred in that case. I immediately ran my finger into the wound in the scalp, and shortly the hemorrhage ceased. I then prepared for operating, but as soon as I tried to make an opening in order to elevate the bone the hemorrhage commenced again violently. I packed with iodoform gauze, stitched up the scalp, put on an antiseptic dressing and sent the patient home. The man made an excellent and uninterrupted recovery.

Another case was that of a boy 14 years of age who was struck over the parietal eminence. I found the bone depressed, and quite a quantity of brain substance had escaped. I operated immediately and he made a good recovery.

A third case was that of a boy who fell from a horse, but as no immediate serious symptoms developed, the family did not call in a physician. He got along all right for a while, and then a persistent headache began to manifest itself, later a progressive paralysis, and now he is only able to sit up in bed. This demonstrates what the outcome is liable to be without operation.

**Dr. Averill** of Pennsylvania—About four years ago I was called to see a child 3 years old who had been kicked by a horse. The superior portion of the frontal bone was fractured, with depression of the upper edge to the extent of about one-half or three-fourths of an inch, lacerating the meninges extensively as well as the brain tissue. I removed probably two or three ounces of brain substance, excised the lacerated meninges, brought together the soft tissues of the scalp, dressed antiseptically and obtained a very satisfactory recovery. There was never any febrile condition, little pain, and the recovery was complete in about five weeks.

**Dr. Griffith** of Kansas City—These reported cases are very interesting to me. My idea is that we can not be too careful about the prognosis in these cases, and also about insisting on going into the scalp to ascertain whether or not the skull is injured; there is nothing dangerous about this procedure, and we can promise the family that no harm will result from it. I think the method mentioned for stopping hemorrhage of the scalp unique. In our place we do it by the pressure method, opening the scalp, running a loop stitch clear around a given area going down on to the skull proper, and in this way we get a complete closure of all the vessels in this area.

**Dr. Reyburn**, Washington, D. C.—I am more inclined to operative interference in these cases than I was in the early years of my practice. I think that where there is any suspicion of a serious injury it is best to open the scalp and ascertain positively the condition existing. I will cite in support of this a couple of cases in my own experience: One case was that of a boy who had been struck over the head by an iron bar, and shortly afterward went into violent convulsions. I immediately, upon my arrival, opened the scalp and removed the depressed bone. The improvement was immediate and the case went on to recovery.

At about the same time another boy was similarly injured, but he did not come under my hands at once, nor did he receive the attention which he should have had. On the third day I removed a spicule of bone which extended into the brain; soon after symptoms of inflammation of the brain developed and death resulted. So I repeat that my advice is, where there is any doubt in the mind of the surgeon, to invariably open the scalp and clear away any such doubts. There is no danger whatever in such a proceeding except in a child of from 2 to 5 years of age, but when the individual is older than that, in waiting there is danger of the development of inflammation of the brain.

**Dr. Schaefer**—In reply to Dr. Griffith's remarks about the loop stitch I will say that it was introduced by a Chicago surgeon, Dr. Frank, a few years ago. I followed this method in one of my cases and came to the conclusion that it was inferior to the plan described in this paper. It increases the danger of infection, as it is necessary to cover quite an area, and the needle will have to enter the tissues perhaps fifty times, while in the method illustrated only two or three, and occasionally four stitches, are required. I am pleased with the stand taken by Dr. Reyburn of Washington. I believe that more of these cases could be saved by timely operation. In all probability those who die after the operation would have died anyway.

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# A REPORT ON SOME CASES OF BRAIN SURGERY.

Read by title in the Section of Surgery, at the Forty-fourth Annual Meeting of the American Medical Association.

BY EMORY LANPHEAR, M.D., Ph.D.
KANSAS CITY, MO.
Surgeon to All Saints Hospital and to the German Hospital; Consulting Surgeon to the Good Samaritan Hospital; Professor of Operative and Clinical Surgery in the Kansas City Medical College.

Only too often reports of cases are published before sufficient time has elapsed to determine whether or not a cure has been effected. While a rule which I attempt to follow is, to report no cases until I am satisfied as to the outcome, a few case histories have been published regarding which I wish now to make a supplemental report:

(*A.*) *Removal of Gasserian Ganglion.*—Something more than a year ago I sent out a report of a case of removal of the Gasserian ganglion by the method of Mr. Rose. Inasmuch as this operation is still a debatable one, its opponents claiming that the disease for which the operation is made will return inside of a few months, we who are in favor of the operation are compelled to report from time to time as to the condition of patients. The case to which reference is made has progressed satisfactorily during the past year, and has had absolutely no return of the fearful neuralgia, so I feel constrained to repeat that which I said in making my report of the operation namely, that a complete cure has been secured. While the operation is a most formidable one, there are many cases of inveterate, incurable trigeminal neuralgia which are of sufficient severity to justify the operation. and I believe it is worthy of further trial. The method of Rose is certainly the best yet devised, though possibly further experiment along the line proposed by Frank Hartley of New York,[1] may show it to be better.

(*B.*) *Cerebral Hemorrhage.*—About two years ago I published a report of my first case of trephining for cerebral hemorrhage. This was a case of subcortical bleeding, and the record of it was printed only a few months after the operation. At that time a statement was made that the results were satisfactory. The subsequent history of the case is one of restoration to health with ability to work and to care for himself, although the use of the arm was not regained nor was his speech, owing to the great destruction of the cortical substance in the arm and speech centers.

Since that time I have operated upon two other cases of cerebral hemorrhage besides a number of cases of "apoplexy" due to meningeal hemorrhage. The second case of true cerebral hemorrhage was that of I. M., 54 years of age, who came under my care in June, 1892, suffering from hemiplegia and aphasia due to a hemorrhage. He was admitted to All Saints hospital and after due preparation a large flap was turned back and three one-inch buttons removed over the arm, leg and speech centers. These I joined by bone forceps. The dura was opened; no evidence of hemorrhage was to be seen except a white infiltrate over the speech and lower part of arm centers. This was opened and a considerable amount of broken-down brain removed; extending the cut upward toward the leg area, a clot a little more than one inch in length was found about half an inch below the surface pressing upon the connecting fibers of the leg and arm regions. This was removed, the cavity irrigated, and catgut drainage established, with the usual closure of dura; the pieces of skull were replaced and the scalp carefully sutured to hold them in place; usual dressings.

Convalescence was speedy and uneventful. For three days there was a little fever (100° F.) and absolutely no improvement in paralysis; then motion began to return slowly to the affected side and in a few weeks patient was walking around with a cane with but little difficulty. Motor power has not returned in the hand, but the arm and fore-arm now have some motion, slowly improving. Speech remains wholly unaffected. The bladder irritation and obstinate constipation, so prominent before operation, have entirely disappeared, and patient regards himself as vastly improved.

The third case was that of J. P. E., male, age 42 years, patient of Dr. J. R. Kistler who saw him at 4 P.M. on March 31, 1893, and found left-sided hemiplegia which came on 32 hours before while straining at stool; for some hours previously he had complained of vertigo and had spoken of a "bad feeling" in the head with heaviness of hand and foot two days before, at which time he went to bed with some vomiting. Temperature $100\frac{1}{2}$; convulsion of paralyzed side occasionally; has been wildly delirious for some hours, and is becoming comatose. He was removed to the German hospital.

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[1] Annals of Surgery, May, 1893.

At 9 A. M. coma was complete; I opened scalp and removed piece of skull two by four inches over motor area. The dura very tense and pulseless. On cutting through the dura the brain bulged prominently through into the opening. With a knife I cut directly into the ventricle through the parietal convolutions and found clot filling the lateral ventricle with considerable fluid blood mixed with the cerebro-spinal fluid and broken-down tissue. I cleaned out the clots gently and irrigated with hot normal salt solution. As oozing seemed persistent a little iodoform gauze packing was introduced. Bulging was less, and after suturing dura around the packing, pulsation was found to have returned. Usual dressings and after-treatment.

April 1. Patient died at 10 A. M. Diagnosis, death from shock.

Owing to my absence from the city, no autopsy was held.

After the severer apoplectiform symptoms have disappeared, embolism must be excluded as trephining would be wholly unreasonable in the latter disease. One must also carefully distinguish from hemiplegic forms of intracranial syphilis and tumors which may be suddenly manifested.

The following points will be found useful in determining whether or not trephining is justifiable when the diagnosis of a cerebral hemorrhage is clearly established:

1. When there has been a blow upon the head and hemiplegia, aphasia, or hemianopsia follows, there is nearly always a hemorrhage which may be cured by opening the cranium at the point indicated by cerebral localization.

2. Paralysis of the third, fourth, or sixth pairs of nerves indicates a lesion in the pons and contra indicates operation.

3. A slight premonitory attack, affecting speech temporarily, or producing a heaviness of hand or foot for a few minutes, if followed by hemiplegia may be taken as a good point in favor of operation, as the bleeding vessel is probably on the surface or very superficial.

4. Paralyses of a very limited extent, especially if complete, are not often due to hemorrhage—being local palsies rather than the peripheral indicative of cerebral disease.

5. A very severe headache followed by gradually but rapidly deepening coma and hemiplegia becoming more and more complete means a hemorrhage into the great basal ganglia—probably beyond surgical help.

6. When the case presents a history of moderate loss of power or complete hemiplegia without unconsciousness, followed in a few hours by sudden appearance of coma, marked fall of temperature succeeded by some fever, a hemorrhage has broken into the ventricles or beneath the membranes, is still progressing, and indicates immediate trephining; a day or two afterwards will be too late, so if done at all it should be performed within a few hours, if possible.

7. Very sudden and complete hemiplegia and coma (coming on as if the patient were struck with a hammer) usually means embolism; heart lesions, endoarteritis and syphilis strengthen the probability.

8. Bilateral hemianopsia (blindness of corresponding sides of both eyes) appearing suddenly is apt to be due to a hemorrhage in the occipital lobe of the opposite side and justifies exploratory operation.

9. Profound coma and relaxation without any hemiplegia usually depend upon injury to the pons and decide against operation.

10. Vomiting, severe occipital headache and vertigo, with or without a distinct paralysis render a cerebellar hemorrhage probable; ocular symptoms, like nystagmus and strabismus are also apt to accompany these symptoms of cerebellar lesion; exploratory operation is justifiable.

11. According to Hughlings Jackson, convulsions, early rigidity and conjugate deviation of the eyes of a spastic form are conclusive evidence of hemorrhage. Convulsions always accompany hemorrhage in young persons.

(*C.*) *Idiocy.*—A year ago I presented the history of a little idiot from California operated upon by linear craniotomy. At that time the improvement had been quite remarkable. During the past year his progress has not been so rapid as was anticipated and yet has been quite satisfactory. The present condition, according to the report of the mother, is promising as to the future development of the child's mind, and physically he is in far better condition than before the operation.

During the last year I have made nearly a dozen craniotomies for idiocy, not only in the microcephalic variety, but also in cases of congenital idiocy, hydrocephalic, epileptic and traumatic. The most satisfactory of these cases is that of Henry B—, of Cairo, Ill., patient of Dr. J. C. Sullivan, age 9 years, presented for operation September 22, 1892. Family history neurotic, epilepsy and insanity being present in near relatives. General health excellent; no history of illness except meningitis at his third year. He has presented all the signs of the genetous form of idiocy since his birth, and has suffered from convulsive epilepsy for several years, the seizures increasing in severity and number until they occur almost daily of late. *Status presens* — Child well developed physically, except in the lower extremities; has all the symptoms of congenital agenesis of gray matter, viz: idiotic expression, prominent and brutal lips, irregular and decayed teeth, and dribbling of saliva; he has the habit of sitting alone and swaying back and forth with a crooning noise, quite frequently throwing himself back on the pillow, screaming or moaning, tossing his head from side to side as if in pain; mental condition a perfect blank. The mother states that the child has never shown the slightest sign of intelligence, has never attempted to walk or to use his hands except automatically, has never tried to say a word, or appeared to notice anything that is said to him nor to pay attention to tones; at times she even thought him deaf because of his inattention to sounds. He has to have his food masticated and put far back in his mouth, as he has never learned to chew, and sometimes can scarcely swallow food, even liquids. He lies for hours, sometimes, simply whining to himself or moaning. He becomes fretful when hungry, but is generally good-natured when kept well-fed.

The mother was told that this was a case that presented absolutely no hope from operation, as it was a variety that had never been operated upon so far as can be learned, and operation might possibly prove fatal. It was explained to her that there was the barest possibility that the irritation set up by the operation might produce a trifle of improvement, and she decided to take the chance; consequently the child was prepared in the usual manner for operation.

September 22.—Craniotomy made at All Saints hospital, on the left side of head; skull very thick; dura bulged strongly into opening, pulseless, but in enlarging trephine hole to the usual dimensions, pulsation was established. The opening through the dura showed a paleness of the brain, and shallow sulci were noticed. Dura and scalp closed and patient put to bed in good shape.

September 23.—Little shock noted. Patient slept well. Restless this morning, but food given him, after which his actions were the same as if no operation had been made. Temperature 99½.

September 24.—Doing nicely; no disturbance from operation; has a brighter appearance; does not moan nor act as if in pain so much as before operation, and symptoms less severe.

September 31.—Convalescence from operation has been uninterrupted. The mother notes the great change in the manner of conduct, and hopes for improvement.

October 5.—Operation made on right side of head. Bone greatly thickened, but soft; removed to the extent of two by four and one-half inches. Dura not opened; no blood lost; duration of operation, 28 minutes.

October 6.—No shock; resting quietly; temperature 99; in evening, doing well; sitting up as usual.

October 7.—No bad symptoms; restless manner entirely gone; has not cried since operation.

October 17.—Discharged from hospital.

December 26.—Mother writes that Henry is improving in general condition; spasms very infrequent and not severe, and he is beginning to pay attention to what is said to him, and particularly as to the tone of the voice. When spoken to crossly he cries as would a baby six or eight months of age. He is learning to play with toys, and seems to take an interest in some things that are going on about him.

March 22, 1893.—The mother writes: "Henry seems altogether different. He has lost the restless way he had before the operation. He seems contented and satisfied everywhere. His feet are filling out, and he is getting a little use of his legs. His flesh is firmer and more solid. When he is hungry, he hollers, "Eat, eat, eat!" and, Doctor, his ways are all so much like a one-year-old baby's. He tries to climb up by chairs and stand on his feet, and I notice that if he happens to fall when climbing up, he is careful to hold his head up and try not to fall again. He does not put his hands to his ears and head as he did before the operation. He gets amused with playthings and seems to enjoy himself. He seems to grow stronger in every way, but does not improve about walking. Still, he wants to hold to anything that he can reach. He eats hearty and sleeps well. His arms and body seem to be very strong, and his lower limbs are improving also. The way I first noticed his flesh was getting more solid was when he would kiss me he would press his cheek against my face and it felt so much harder than before you ever saw him, so I felt of his arms and legs, and I know that he is gaining in flesh.

"Well, Doctor, I have been asked more questions about him since his operation; it seems to be a miracle the way he has improved, so everybody says who sees him. He blows his lips like a child just learning to talk. He can say four words right plainly, and he often does what I tell him to do and seems to understand me. I can say God bless you, and hope that some day we can send you money."

This was a typical case of congenital idiocy, and as pronounced as any that has ever come under my observation; yet if the mother's report can be regarded as true, the amount of development since operation has been more phenomenal than that of any case that has ever been reported; which leads to the conclusion that operation is justifiable in such cases in the way of further experiment.

The second case I wish to report is that of Roy L—, of Independence, Kan., age 12 years, patient of Dr. W. A. McCully. Well developed; general health, good, and in excellent bodily condition. As a baby he was excessively nervous, but otherwise well, and was fairly intelligent up to the age of three and one-half years, when he began to have "night terrors" and a few months later developed epilepsy. Since then his mental development has been very slow. November 29, examination shows patient to be suffering from epileptic idiocy (the idiocy being of high grade); his language is fairly good, though sharp and quick, and only the most infantile forms of expression are used. His right side is far less developed than his left, and the spasms are always on the right side of the body. He bolts his food, and has to be watched constantly because of a developing viciousness. He can intimate when he wants to micturate and defecate, but can not unbutton his clothes. He has absolutely no idea of right or wrong, the moral sense being totally absent. He plays with the usual toys, is passionately fond of music, and can readily learn to whistle a tune. Operation was strongly advised for the cure of epilepsy, with the advice to send the child to the Wilbur School for the Feeble-Minded at Kalamazoo, Mich., as soon as recovery from operation has occurred.

December 1.—Operation made at All Saints hospital with the usual flap on the left side; no bleeding of consequence. With a gouge a cut was made through the skull to the dura just at the margin of hair on forehead, then opened up over the frontal and motor regions about two inches wide and four inches long. Over the leg and a part of the arm center there was found an angioma measuring about one and one-half inches across. Inflammatory deposits were numerous, and after excision of the tumor the adhesions were broken up without hemorrhage, though the veins in the dura were almost varicose in size and had to be ligated with catgut. Dura sewed with catgut, iodoform put in, catgut sutures in the scalp, usual dressings. Duration of operation, one hour and ten minutes. In the evening he was resting well; temperature 99½, and no evidence of spasms.

December 2.—Slept four or five hours. No spasms during night; temperature 99 at 10 o'clock A. M. At 10 P. M. quite restless, so ordered two drams of elixir of bromid of potash, to be repeated if necessary.

December 3.—Slept nearly all night. In fine condition at 10 A. M. Temperature 98½. Sitting up in bed playing.

December 5.—Patient allowed to get up last evening. During the night had a few slight convulsions: otherwise doing first rate.

December 9.—Dressings removed. Wound found healed by primary union; general condition satisfactory.

December 21.—Patient discharged from hospital. No return of spasms. Crossness and viciousness very much improved.

May 10, 1893.—Reports from patient indicate marked improvement in his mental condition. Language is being acquired with great rapidity. Education already begun with gratifying success. No return of convulsions since discharge from the hospital.

This was a typical case of idiocy due to convulsive seizures, I believe, and may be taken as an illustrative case of what can be accomplished by operative procedures in cases of suitable character. Of course no man can make a diagnosis of angioma of the dura before operation, so that in a measure such cases are exploratory. Although too little time has elapsed since the operation to speak definitely as to the ultimate result, it seems to me that the amount of good already accomplished more than compensates for the outlay of time and money.

(*D.*) *Cerebral Softening.*—It was my good pleasure to report the first case of trephining that was ever made for softening of the brain. By the term "softening" I do not mean cerebral abscess; all surgeons would trephine for that disease; nor to the condition formerly called "red softening," which is in reality only the initial stage of a suppurative inflammation, which, if not arrested, leads to destruction of the nerve cells by pyogenic microörganisms—but to the condition which follows cerebral hemorrhage or embolism, in which, upon opening the skull, we find a softened mass semi-fluid in consistence, of purulent appearance, but in reality not pus. The case mentioned was one of cerebral hemorrhage involving the speech center and the motor area of many months' standing. The diagnosis was clear and unmistakable—the maddening sensations in the head and the temporary fits of irritability in which attempts had been made upon the life of his wife were undoubtedly due to a condition of true softening. The head was opened under the strictest antiseptic precautions, and a cavity containing nearly a pint of broken-down brain and other *debris* (but no pus) was carefully irrigated. This cavity was filled with normal salt solution, the dura replaced and stitched, the scalp sewed into place without drainage, with a firm compress of gauze. His recovery was uneventful as already recorded elsewhere; nor was the improvement merely temporary as was predicted by some who heard for the first time my proposition to relieve such cases by operation. To this day he has had no recurrence of the bad symptoms. He is enjoying life in traveling, and has sent me a number of other cases for trephining. He feels that his improvement has been decidedly great, and he is going about, spreading the good news that for such hitherto helpless cases there is a possibility of relief in surgical interference.

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Alexander (*Medical Chronicle*, No. 3, p. 175) reports the entire disappearance of a myxedema lasting two years in an insane woman. The mental condition was not improved. Half of a thyroid gland of a cow was employed, given twice weekly, finely divided and mixed with bread crumbs.

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# INTESTINAL ANASTOMOSIS—BY A NEW METHOD, WITHOUT PLATES AND WITH BUT TWO KNOTS—EITHER SILK OR CATGUT SUTURES MAY BE USED.

Read before the Section of Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

BY M. E. CONNELL, M. D.
SUPERINTENDENT OF MILWAUKEE COUNTY HOSPITAL.

When through injury or disease it is found necessary to exclude or remove a portion of the intestinal canal, the question of restoration of its continuity which comes to the surgeon, and how or which is the best method to accomplish this desired result is one of great importance.

Many methods are now in the surgical field; but we cannot have one too many if all are good, and the surgeon must familiarize himself with one method or be equally proficient in all, in case of an emergency, such as gunshot wounds or strangulated hernia.

The universal interest which has been manifested in the plate operation and its modifications, indicate very clearly that any method which promises an improvement in the technique of intestinal surgery, whether in suturing or the saving of time, will be gladly welcomed by the profession.

It is now more than a year ago that I made a union, which seemed to me to promise a great deal; a method which I thought could be applied to the intestinal canal at almost any point, and wherein the number of knots would be reduced to two. I do not wish to be understood as claiming that a reduction in the number of knots would in itself be any improvement; while of course it would be a factor very acceptable to the surgeon if time could be saved in this manner, and there would be a coalescence of the other points in the technique, thus forming a desirable combination with the number of knots.

It is obvious in the method I will endeavor to describe to you, and I think you will agree with me, that more than two knots would be detrimental; one tie at each end of the incision or union is all that can be used advantageously, for the one great desideratum connected with this method is that every part of the suture be buried out of sight, as in the plate operation, and where the number of knots is increased to three, four, six or more, I do not see how this very important point could be achieved, for you will notice that if this suture is made properly, knots at any point other than the end could not be securely buried.

The idea herein involved is probably a modification of the plate operation, that is, the same in principle but without plates.

I felt certain that if I could penetrate or transfix both bowel walls when the serous serfaces were in apposition, and after being transfixed could keep them so, that is, with the serous surfaces in constant contact I would accomplish by means of this suture what had been gained by the plate union.

With this object in view I tried a series of experiments on dogs. I placed the serous surfaces of the walls to be sutured in apposition, and secured them so by a continuous to and fro or serpentine suture. I then drew these two walls apart, loosening the suture, so to speak, and turning the intestine over brought the serous surfaces of the other two walls together, and transfixed them with a similar suture.

The results have indeed been remarkable. This idea I have *modified so as to apply it to all parts* of the intestine, to the stomach and gall bladder as well.

It would only consume your valuable time to detail the many attempts and failures which led up to this method of suturing, which I do not doubt will recommend itself to you as eminently fitting for the work that I claim it will do.

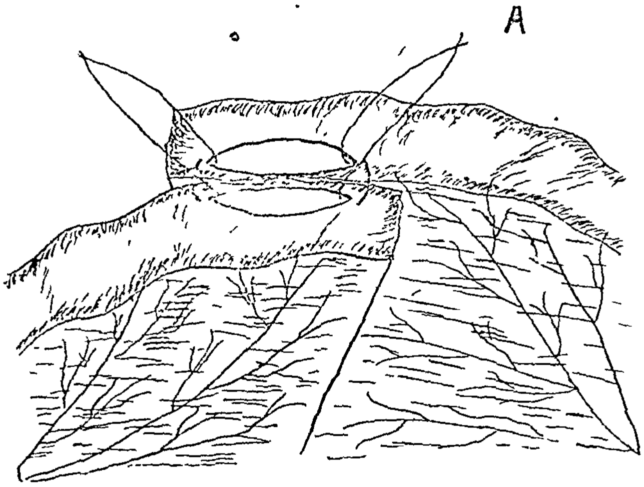
My first application of this suture was in oblique enterorrhaphy; the intestine being divided obliquely *a la* Robert Morris of New York; but my effort at this session will be to briefly describe to you this method of suturing as applied in anastomosis, wherein the initial steps are the same as in the plate operation.

The bowel is severed or a portion resected; the cut ends of which are then invaginated and closed with catgut or silk sutures.

The closed ends are passed by each other, and an opening (I prefer one slightly diamond, or oval shaped), of any length desired is then made in the convex border of both the proxinal and distal portion of intestine.

The opposing walls are then placed side by side, so that the ends of incision are parallel with each other, and I found that it facilitates the work to have a suspending thread or loop run through the bowel at each end of the opening, and held by an assistant. To insert this thread for suspension, you pass your needle from within outwards through the walls of one portion of bowel, and over to the other, passing the needle from without inwards, then bring both ends up through the openings and tie, thus having the knots above. (See A.)

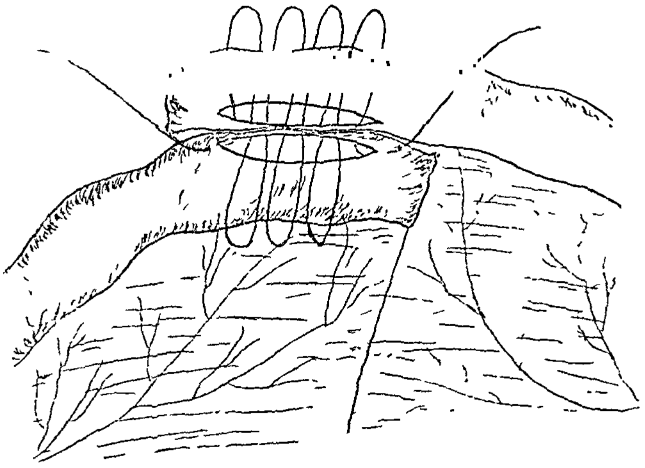
A



When there is a tendency to great eversion of the margins of the openings, or when you have made an unusually long incision, it will further greatly assist you to have a third suspending thread inserted midway between the other two.

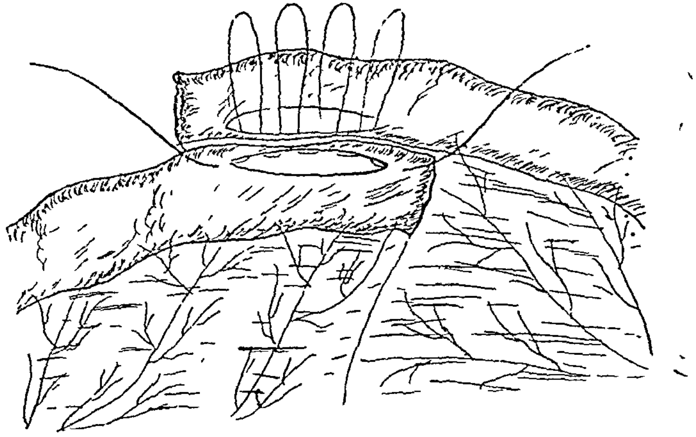
As your assistant applies gentle tension or traction to these suspending loops, the opposing serous surfaces are brought into perfect contact, and you can very quickly insert the first suture, which is of looped stitches, by inserting your needle from without inwards through the bowel wall, at the right end of one opening, then passing it back and forth through all coats of both walls which are in apposition until the full length of incision has been secured, and pass your needle from within outward through the bowel wall at the opposite end of opening, leaving

B



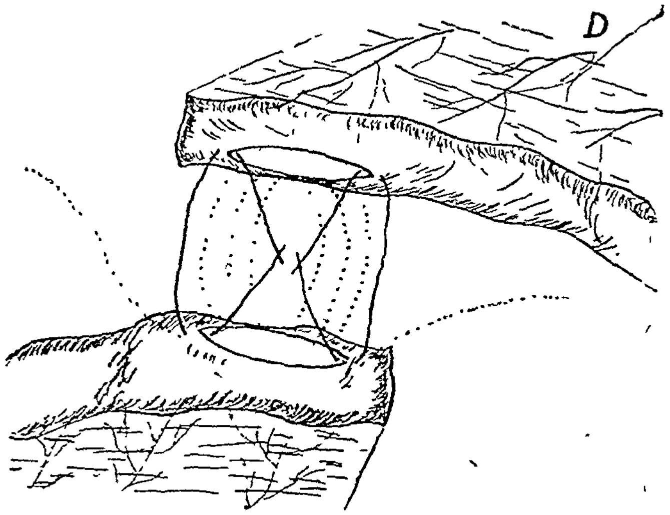
each stitch as a loop on the side where taken, (as in B) or each alternate stitch may be loose, thus having your loops all one side, (as shown in C).

C



You next withdraw the middle suspending loop, if you have inserted one, and then separate these sutured walls as far as the looped stitches will allow; pass the knotted ends of suspending loops down

D



through the middle, (D) draw them up on the other side, and you will have the serous surfaces of the other two opposing walls in opposition. (See E.)

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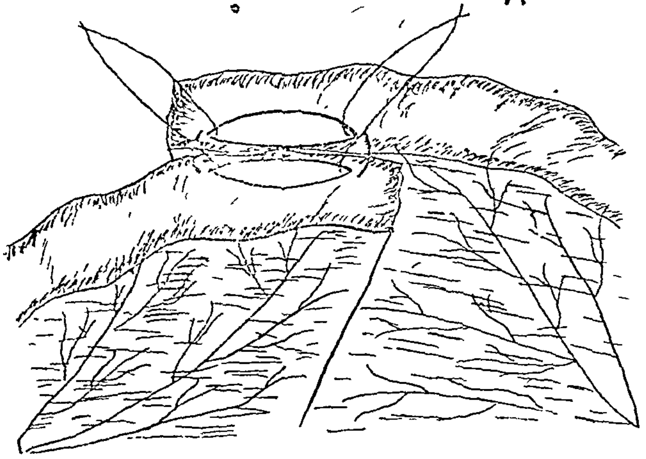
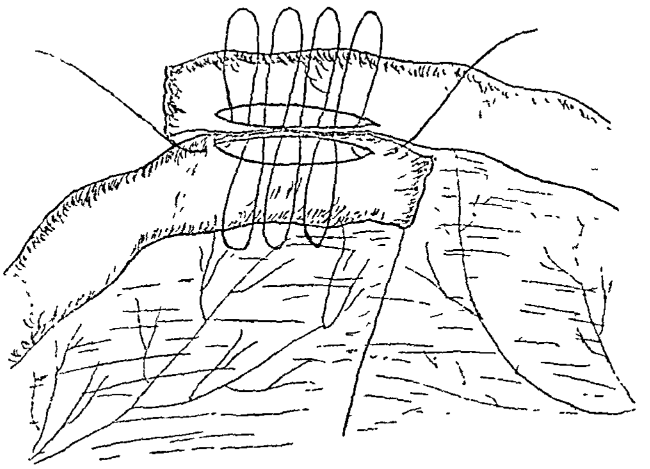
A



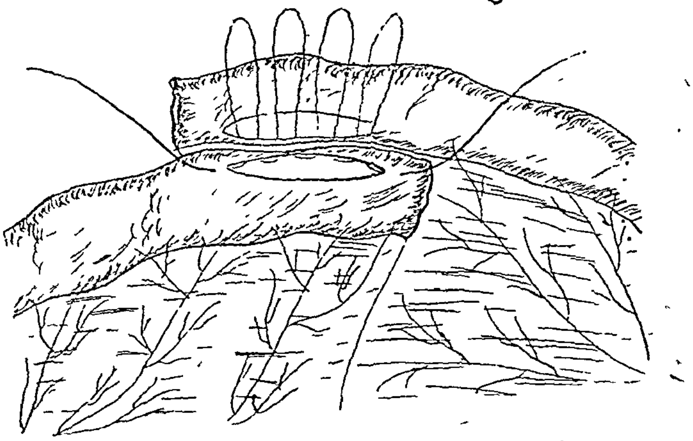
When there is a tendency to great eversion of the margins of the openings, or when you have made an unusually long incision, it will further greatly assist you to have a third suspending thread inserted midway between the other two.

As your assistant applies gentle tension or traction to these suspending loops, the opposing serous surfaces are brought into perfect contact, and you can very quickly insert the first suture, which is of looped stitches, by inserting your needle from without inwards through the bowel wall, at the *right* end of one opening, then passing it back and forth through all coats of both walls which are in apposition until the full length of incision has been secured, and pass your needle from within outward through the bowel wall at the opposite end of opening, leaving each stitch as a loop on the side where taken, (as in B) or each alternate stitch may be loose, thus having your loops all one side, (as shown in C).

B

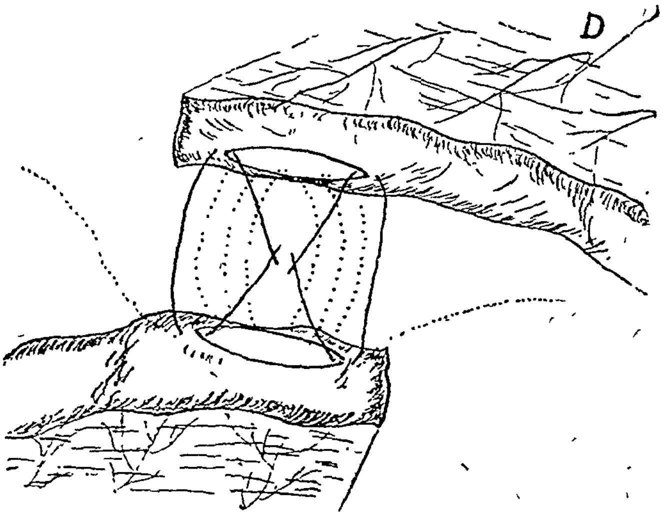


C



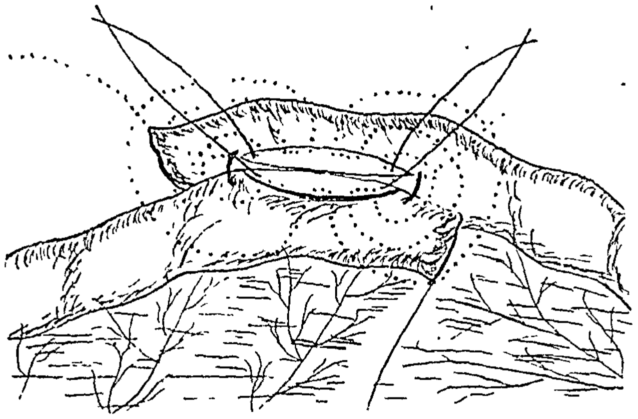
You next withdraw the middle suspending loop, if you have inserted one, and then separate these sutured walls as far as the looped stitches will allow; pass the knotted ends of suspending loops down through the middle, (D) draw them up on the other side, and you will have the serous surfaces of the other two opposing walls in opposition. (See E.)

D



You can now put in a middle suspending thread if you wish, and then insert your second suture, in the same manner as the first, with the exception that no loops are made, all stitches being drawn tight.

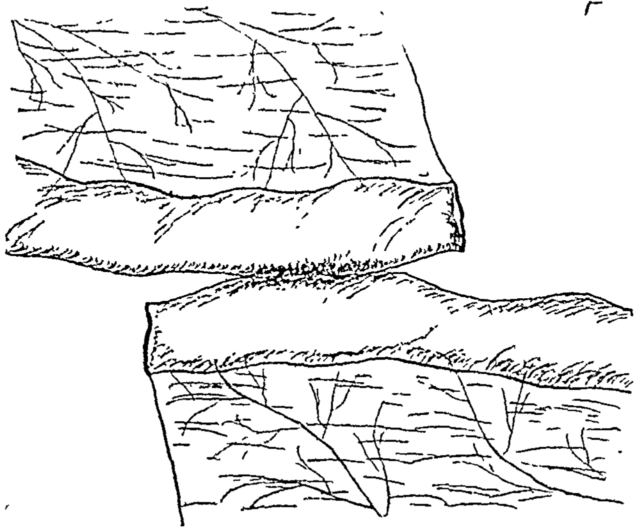
E



You now withdraw all suspending threads and draw up the loops of your first suture, and pull the opposing ends of both sutures till taut, and tie; not cutting off the ends of sutures after making the first knot until you have made the second, as they are necessary in making traction.

After both knots are tied, cut off the ends close, so as to leave no dangling drains, and your union by anastomosis is complete. (See F.) It has never been found necessary to use any retaining sutures.

F



When using catgut for suturing, the knot must be secured with a silk ligature to prevent loosening, as it becomes softened by the intestinal and serous fluids.

This same result is achieved by making your first suture of tight stitches, in which case you will avoid the turning over of the intestine, which seems somewhat puzzling to not a few surgeons and then your second suture is inserted as shown in illustration G.

By inserting your needle from without inwards as before, and bring it out on the same side at about a distance of 1¼ of an inch, then passing it over to the opposite wall and take a stitch through *all* coats about 1¼ of an inch long, parallel with the margin of wound, and repeat until all has been secured and pass your needle out as before, when your sutures are drawn taut and tied and you have same result as at F.

In the series of experiments to which I have referred, many specimens were preserved, and from them I have selected these, which you will see are illustrative of the results obtained from the application of this suture in anastomosis.

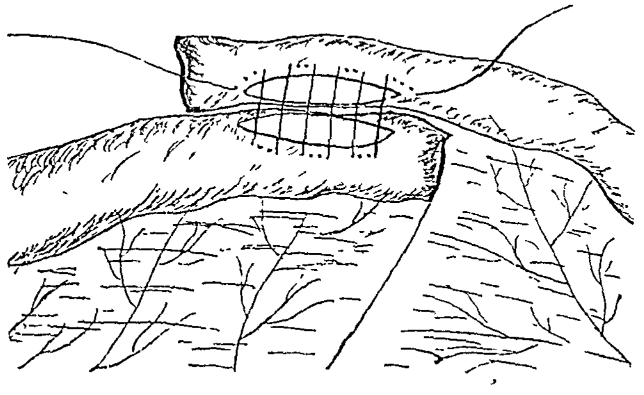
I have made no attempt to dissect or remove any of the stitches or suturing material, and as I am aware that time is a great factor in proving the value of a method, in some cases I have allowed quite a lengthened period to elapse between the experiment and the resection or death of the animal, the shortest time having been five days and the longest seven months and eight days; there is one still living of eight months duration.

In oblique enterorrhaphy the shortest time was fourteen days and the longest five months and twelve days; there is one still living of eleven months duration.

In circular union where I employed but one knot, the shortest time elapsing between experiment and resection, was twelve days, and there are three living, two of about eight and a half months duration and one where three circular unions were made at one time, which are now of six months and eighteen days duration.

The date of the experiment and time of resection or death of the animal is tagged with each specimen.

Although it may seem a little foreign to the subject of anastomosis, still I wish to mention and show you the specimen of No. 10 which operation was made on July 14th, 1892, when a union in two places at one sitting was made; both of these unions were of the oblique method and about one foot apart.



The subject was a large mastiff, the suture material very heavy catgut with darning needles. On August 29th, 1892, one (1) month and fifteen (15) days after the operation was made, I concluded to kill the animal and remove the specimen, so no effort was made toward asepsis or antisepsis and before resecting I also thought that I would practice on the intestine. An oblique enterorrhaphy was made between the two unions before mentioned. Then I resected that portion of intestine embracing these three unions and reunited the divided intestine by anastomosis, using the looped and tight stitch suture. Three suspending loops were used with perfect ease.

This anastomotic union was also made only for practice, but it looked so perfect that I concluded to close the abdomen and give the animal a chance to live, thus making experiment No. 17.

The first to which I wish to call your attention is that of experiment No. 12. It was on intestinal anastomosis, the experimental operation being made August 1st, 1892, in the presence of Dr. J. H. McBride of the Milwaukee Sanitarium, the subject being a small pug dog.

This was the first anastomosis made by this suture, my thought in previous work having been in the direction of an end to end union by the oblique incision *a la* "Morris."

In this instance the first suture was of tight stitches, and the second was loose or parallel, though not looped stitches.

The dog was killed August 16th, fifteen (15) days after the operation. There were no adhesions, the abdominal cavity being free from all signs of any inflammation, the internal organs lying free and in normal position. The intestinal union is perfect; there seems to be no cicatricial contraction worthy of mention.

I would next like to have you observe the specimen of No. 13.

In this case there was a double operation made on August 3rd, 1892. An anastomosis similar to that of No. 12, which we have just examined, and an oblique union.

This subject was a very large savage bulldog which was given to me as a sacrifice to science on account of his being so very troublesome. He escaped from our kennel fifteen days after the operation and when we went to his former home for him, his master would not give him up, stating that the operation had changed his disposition to that extent, that the family were willing to give him a new trial.

The dog's good behavior continued for several months, when he slid back into his old habits, and he was again turned over to us and was killed March 21st, 1893, seven (7) months and eighteen (18) days after the operation.

Silk sutures were used in both the anastomosis and the oblique enterorrhaphy.

The specimens will speak for themselves. No adhesions, or signs of any inflammatory action were found.

The next specimen of interest is that of No. 14, which in all probability can be considered under the head of anastomosis, it being that of a gastro-enterostomy, the union of the stomach at the convex surface with the duodenum at about its middle third.

The operation was made on August 10th, 1892, and the animal killed September 22nd, 1892, twelve days after the operation. Here also there was found no adhesions of abdominal contents. FF silk suture was used in making this union which seems perfect in every respect. (The communicating foramen being quite large.)

One month and eighteen days after the second operation was made, the animal was killed and we have here a very interesting specimen. It is extremely valuable in showing how nature will come to the surgeon's rescue, if given half a chance.

Here we have an anastomosis with what would be deemed an extraordinary length of incision, namely one and one-half inch, and following even this unusually long incision we still find the formation of an enterolith, with which as it increases in size from accumulations we find the incision or anastomotic opening and the bowel enlarging from day to day, so that in one month and eighteen days after the anastomosis was made we have the proximal end of the intestine distended to a distance of about ten (10) inches from the point of operation. Yes, distended we might say to four times its normal size and the distal portion of the bowel is also enormously dilated.

This portion of intestine in its distended state, produced by the obstruction from the enterolith, resembles in point of capacity that of an ordinary dog's stomach. It may be of interest to note here that at the time of making the anastomosis, instead of placing the ends of divided bowel so that the peristaltic action would be downward, they were so placed that both closed ends were parallel, thus directing the peristaltic wave of the distal portion upward, which no doubt favored the formation of the enterolith considering the mixed diet which a dog selects.

The specimen of No. 18 is that of an intestinal anastomosis made in the presence of a "doubting Thomas," Dr. Mackie, after his return from his last visit to Europe. The operation was made September 6th, 1892, and the animal killed one month later, on October 6th, 1892. No adhesions were found and union is perfect.

In No. 21 the subject was a large white dog. On September 28th, 1892 a double anastomosis was made in the presence of Dr. Mackie of Milwaukee and Dr. Philler of Waukesha. The animal was killed October 6th, 1892, eight days after the operation; and at the site of the first union an immense enterolith was found. This specimen is of interest in showing, that while both unions were made at the same time, the concretion of bone had formed at the site of the proximal union only, while reparative adhesion takes place at both unions, the distal one being perfect; no enterolith or distention whatever.

In the next and last specimen to which I wish to call your attention, there is also the results of two experimental operations on the same subject, which was a small brown dog. An oblique enterorrhaphy, No. 25 was made October 31st, 1892, and two weeks later on November 14th, 1892, a cholecysto-enterorraphy, No. 26 was made, the gall bladder being united to the duodenum. Four months later on March 13th, 1893, this animal was killed and the specimens removed as you here see them; they have been examined frequently and the unions have stood the test of thorough manipulation. This I deem a very interesting specimen and I hope you will all examine it carefully. It is probably the first time in the annals of surgery that union of the gall bladder with any part of the intestine has been made, experimentally or otherwise, wherein but two knots were applied in the suture.

In conclusion, I wish to ask your consideration for the advantages which this suture offers in comparison with others:

As to the question of speed, the only operation with which this method can be compared is that of the anastomotic union by means of plates, rings or buttons; the plate method as first devised by me had six knots to tie, which was modified by Prof. Senn, he reducing the number to four; even then, in the hands of a skillful surgeon, I think this suture would compare favorably as to time.

Another point in favor of this suture, and a valuable one, is its applicability or adaptability to any part of the intestinal canal, and in whatever form you choose; you are not limited to an anastomosis, for you can make a terminal, circular, or oblique enterorraphy with as great rapidity. In its use you are not confined to intestinal unions alone, for you can unite the gall-bladder or stomach with the intestine at any point.

You are not restricted as to the length of the incision, and this being the case the suture is very applicable in pylorectomy, whereby you can remove any length of the pyloric end of the stomach, and unite it with the duodenum by making an incision in its convex surface of the desired length; or the pyloric end of the stomach and duodenum may be cut obliquely, and union then made by this suture.

An additional great advantage which this suture has above all others, is that no foreign substance is used. While the dog will not object to bone, rawhide or brass, the human subject might, and the surgeon has always in his pocket case the material to make a union such as I have described.

And last but not least, the result obtained in these experiments forced upon me the conclusion that Czerny and Lembert's teaching that but two coats of the intestine should be included in any one suture is so far as dogs are concerned not absolutely necessary, for you will observe that I have in every case penetrated the mesenteric coat, gone into the lumen of the bowel, brought the needle out again, *from* the lumen of the bowel through *all* coats of the intestine, thereby exposing the part penetrated by [illegible] needle point to infection, by the drawing of the suture material through the bowel walls. I am satisfied that this result could not have been obtained, were it not that the point through which the thread passes is buried in the tissues and surrounded by contact of serous surfaces.

That this suture is practical, and that the results are equally as satisfactory as any union heretofore advanced, has been fully shown by the specimens submitted for your examination.

Dr. Oviatt, Wisconsin—The ideal suture is one which does away with a foreign body of any kind and we have this in Dr. Connell's stitch. Another advantage it offers is that we always have the materials at hand—catgut and a darning needle will answer the purpose. I have used Connell's stitch twenty-five times on dogs with two deaths, both of which were due to accidental causes. I think the next serious criticism to be offered the use of plates and the button is the inability to get an opening of sufficient size. I have done Connell's operation in less than ten minutes.

Dr. Herrick, Ohio—I wish to mention an interesting case of my own. A woman 48 years of age had evident symptoms of closure of the cystic duct. I performed an operation upon the gall bladder by bringing it up to the incision in the abdominal wall and holding it firmly against the abdominal walls to prevent the passage of bile into the abdominal cavity. I removed sixteen stones and washed the bladder out with warm water. I then found another accumulation in the cystic duct and removed them, closed the opening into the duct and closed together the openings in the bladder and in the abdominal wall. I secured immediate complete union and the patient was fully recovered in two weeks.

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Dr. Connell—In reply to Dr. Andrews I will say that I don't think this is the best, but it is the easiest to make. The other is nearest the ideal when the corners are satisfactorily turned in and the knot buried.

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Dr. J. B. Murphy of Chicago, made a demonstration on a dog, of the method of making intestinal anastomosis by the use of the "button" bearing his name, after which he made a brief explanation of his method.

Dr. H. O. Walker, Michigan—I wish to speak particularly of Dr. Murphy's button, having used it three times on the human subject. The first case was a case of cholecystoenterostomy. The conditions at the time of the operation were very unfavorable, and the patient died the following morning. It required fifteen minutes to perform the operation. My next case was that of a woman 38 years old who was brought to me on the 26th of last December. She was suffering from a fecal fistula in the right iliac region and was greatly emaciated. Her suffering was so intense that morphine had to be used liberally. Three attempts had been previously made to close the fistula. I made the incision, found the adhesions and completed the operation in seven minutes. The button was never seen again, probably on account of the negligence of the nurse, but the woman made a good recovery. The next one was a bad case of strangulated hernia which had gone unrecognized seven days when it was brought to me, and at that time general peritonitis existed. I did the operation this time in six minutes, and in operations on the dog have done it in four minutes. One element in particular claimed for the button by Dr. Murphy should be well considered, that is the short duration of time required when it is used.

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## REPORT OF A CASE OF SUCCESSFUL END-TO-END SUTURING OF INTESTINE.

Read in the Section of Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

BY ERNEST T. TAPPEY, M.D.
DETROIT, MICH.

There is a decided division of opinion among surgeons on the subject of the methods employed in uniting different portions of intestine. Some are eager to try, if not to adopt, each new device in the way of plate, ring or button, as it makes its appearance; and others either cling to the older method of suturing or go back to it after having had a trial of the newer methods. The latest device as far as I am aware, is the Murphy button. This, like all others of the class, labors under the disadvantage of remaining for some days as a foreign body of considerable size in the intestine, and at the same time possesses the undoubted advantage of rendering the operation of union much shorter than the older method of suturing.

Abbé has found that the older plates and rings that necessitate only a slit in the side of the intestine in the performance of an anastomosis, are defective in their later results. The opening contracts one-half to two-thirds and as the original opening is one inch and a half, it gradually becomes only three-quarters of an inch or half an inch. Abbé therefore has given up using his catgut rings and other contrivances of this kind, and depends upon the suture entirely, making the opening four inches long. This he considers a very important feature of the operation. (*Med. Record*, April 2, 1892.)

It is to add to the literature of the subject of suturing that I report the following case: Here the wound was one of the small intestine and I preferred to depend upon the suture rather than upon the Murphy button, though I was tempted to use the latter and was dissuaded only by the thought of the button in the intestinal canal after the operation should have been completed.

Alex. McDonald, a man about 40 years of age, remained in Port Huron, Mich., on his way home and while there March 19, 1893, a left inguinal hernia became strangulated. He was allowed to remain in this condition five days. Then a surgeon cut down to liberate the gut, but found a knuckle gangrenous. The wound was not closed but the intestine was sewed to the skin and the patient was then sent to Harper Hospital in Detroit, where he came under my care. I found the whole sac black and gangrenous, and gangrenous tissue about the opening in the intestine, the contents of the bowel discharging through the wound entirely and none through the anus. The sac was amputated at once. I then waited a week until all necrosed tissue had sloughed away and healthy granulations covered the wound surfaces. April 4, chloroform was administered and I proceeded to repair the intestine, with the kind assistance of Drs. McGraw and Walker. The adhesions were broken up, about two inches of the gut excised, a V-shaped piece of the mesentery removed and the cut surfaces then brought together with silk sutures—first the mesentery then the mucous membrane and finally the peritoneal coat of the intestine; here two rows of continuous Lembert sutures were applied. The external wound was left open and packed with iodoform gauze. The patient took chloroform very badly; the action of the heart was so weak that chloroform was withheld and nitroglycerin was administered hypodermatically. The latter part of the operation was performed while the patient was conscious. There was comparatively little sensation, the patient lying still and not complaining while the sutures were being placed in the peritoneal coat. This was of considerable interest to me, for I had seen a short time before, a discussion in the London *Lancet* as to the sensitiveness of the peritoneum, Lawson Tait and others maintaining that it is extremely sensitive, and still others maintaining exactly the contrary.

The recovery was not interrupted by any complications. There was no leakage of the bowel, no rise of temperature above 100. Ten days after the repair of the bowel I curetted the external granulating wound, pared the edges of the skin and sutured them together. This was done without an anæsthetic. There was union by primary intention except one-half inch at the lower angle. Patient was kept on fluid food for three weeks. He left the hospital at the end of five weeks.

### DISCUSSION.

Dr. Murphy of Chicago.—I have used the suture repeatedly and it has many advantages, but it has the disadvantage as to time required and as to leaving stitch holes behind inviting infection and if suppuration results from any method that method is not a success. The element of contraction always pertains to lateral approximations and in a lesser degree always to circular ones. If it is wished to make a lateral approximation, anywhere that this can be done an end to end approximation may be done, and where it can be made end to end the button can be used. The foreign body element has been brought up repeatedly in the consideration of the button and this is the very least thing that concerns it; if this is the strongest opposition it is to meet we welcome it because we feel positive that that objection amounts to nothing. I could conceive of a pathological condition which would prevent the free passage of the button but I hope that none of us will get the button into an intestine which is diseased from end to end. The element of time is an exceedingly important one and with the button an approximation can be made in the very shortest possible time. Recently in an operation for removal of a dermoid cyst, I began the incision at 11:34 o'clock, the cyst was removed at 11:39, it took until 11:43 to locate the intestinal obstruction and at 11:48½ the resection and placing of the button was complete; the external wound was closed at 11:58, the whole operation having lasted nineteen minutes.

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Dr. Gaston of Georgia.—This is an appropriate occasion to bring to the attention of the members of this Section an operation done in 1859 where I had occasion to reunite an intestine from which thirty inches had been removed in the case of a man who had attempted to commit suicide. We removed three pieces of gut each over ten inches long. This was when Simm's silver wire suture was first coming into use and we effected with wire as nearly an absolute end to end union as possible. Seven interrupted sutures were put into the circumference of the gut. We found that the ends adjusted themselves to each other accurately by the contraction of the circular fibers of the intestine. The man was kept under the influence of opium after the operation, five grains being given every three hours for forty-eight hours. The final result was favorable and in less than a month the man was up and going about his business. I had the dejecta watched for several weeks but no signs of the sutures were found. Some years after the man died enterorraphy with as great rapidity. In its use you are not confined to intestinal unions alone, for you can unite the gall-bladder or stomach with the intestine at any point.

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DR. VERITY of Chicago.—This button of Dr. Murphy's is a good thing and its application a good one. If it should get dammed up in a constriction of the intestine another button can be put in to help it out.

DR. TAPPEY of Michigan.—I feel that the Murphy button is of wonderful utility and I will be glad to use it in some cases. I would like to ask Dr. Murphy if he will say anything on the subject of the sensitiveness of the peritoneum.

DR. MURPHY.—I could say nothing from my own experience as I have never operated on the peritoneum when an anæsthetic was not used.

DR BOUFFLER of Chicago.—The element which Dr. Tappey has brought out is the keynote to the situation—that is the element of time. I have made a few resections and even where you can get the intestine out it takes time. I don't believe a double row of stitches can be done properly in less than twenty minutes. In two cases it took me twenty minutes; one died because he was wounded a few hours previous and I lost time, and also lost the effect of handling the intestines as little as possible. Persistent handling of the peritoneum lessens its vitality and greatly increases the danger of infection. In consideration of that item, we should have some means of doing the operation in less than twenty minutes.

Another point—surgeons operating in this locality frequently forget their anatomy and fail to recall the manner of the attachment of the mesentery, therefore manipulating the intestines from one end to another. This would be entirely unnecessary if they would remember the obliquity of the attachment of the mesentery to the posterior abdominal wall. Every point that shortens the time of the manipulating of the intestines increases the recoveries. The Murphy button does this. I should not be very much afraid of its causing an obstruction, but would feel very comfortable that it had saved to the patient a fifteen minutes' manipulation of his intestines.

# THREE CASES OF ACUTE INTESTINAL OBSTRUCTION TREATED BY ABDOMINAL SECTION.

*1. Intussusception—2. Volvulus of Sigmoid—3. Strangulation by Meckel's Diverticulum.*

BY A. J. OCHSNER, B. S., F. R. M. S.
CHICAGO, ILL

In reporting these cases of acute intestinal obstruction, due to mechanical causes, I am aware that so small a number of cases cannot have any definite influence upon the plans of treatment which have been discussed with so much vigor in the medical societies in all parts of the world, especially since the general introduction of antiseptic surgery has made surgical treatment, theoretically at least, very attractive.

The fact that individualization is of especial importance in cases of intestinal obstruction makes each additional observation of some value.

I need not detain you by discussing the general subject of intestinal obstruction. This has been done so thoroughly by men of great experience in almost every civilized country, and especially well by our own Professor Senn, that I can certainly not improve upon it. I will consequently at once proceed to consider the cases which I have treated:

*Case 1.*—December 15, 1892, I was called to see Edwin N., a bright, healthy child, 3 years of age, at 741 N. Clark St. His physician, Dr. O. N. Huff, gave me the following history: A week ago the child fell a distance of a foot or two, and complained of a little pain in the region of the cæcum for a few moments, but almost immediately resumed his play. From that time he repeatedly had small twinges of pain in the same region but not severe enough to cause any anxiety on the part of his parents. Within the last six hours he began to suffer severely from pains in the abdomen and to complain of nausea.

The pain was very severe and spasmodic, and during the attacks the abdominal walls were tense and a hard sausage-like mass could be felt and seen to the right of and a little below the umbilicus. A rectal examination gave a negative result. The child had a constant inclination to evacuate the bowels, but the attempts remained fruitless, exeept there was a small amount of mucus passed once or twice.

Dr. Huff and Dr. R. G. Bogue, who had already examined the case, made the diagnosis of intussusception, which I readily confirmed. I immediately proceeded to perform an abdominal section. After the patient was anæsthetized, the abdomen was washed and shaved, then washed again with soap and water and with strong alcohol. An incision four inches long was made in the median line below the umbilicus. The transverse colon was brought out of the wound and was found to contain an invagination of six to eight inches each of the ascending colon and the ileum. There were no adhesions and the serous surfaces were not inflamed; nevertheless it required a considerable amount of force applied alternately by pressure from below and by traction from above to reduce the intussusception. The vermiform appendix, which was five inches in length and almost without any mesentery, had formed a loop around the ileum at its point of entrance into the cæcum. I ligated the appendix at its origin, disinfected the stump with strong carbolic acid, inverted it into the lumen of the cæcum and covered it with a fold of the peritoneum from either side, by means of a few fine silk stitches threaded in ordinary cambric needles. The peritoneal cavity was then closed with silk stitches grasping all the layers of tissue of the abdominal wall.

A sufficient amount of morphia was administered during the first four days to control pain and to lessen peristalsis; on the fifth day a small glycerin and warm water enema was given which effected a slight evacuation of the bowels. A daily evacuation was obtained in the same manner after this for the first two weeks. The stitches were removed on the ninth day. The wound healed primarily throughout. Rubber adhesive straps were used to support the abdominal scar for six weeks after the operation.

There was scarcely any deviation from normal in pulse and temperature after the operation, and the child showed almost no shock. He was permitted to sit up three weeks after the operation and to walk about a week later. His diet consisted of milk and broth for four weeks, and of very simple and easily digested food for two months more..

The child is in perfect health at the present time, six months after the operation.

In this case it is probable that at the time of the original fall the vermiform appendix was thrown around the ileum, causing a slight constriction, and that this in turn gave rise to the intussusception; consequently the removal of the appendix would be likely to prevent a recurrence. This peculiarity in this case seems to me to be of especial interest.

It was deemed wiser not to attempt to reduce the intussusception by means of large enemata, because we could not be certain as to the condition of the intestine nor the anatomical cause, which evidently must have been connected with the fall. Moreover, the intestine has been ruptured upon applying as low as five feet of hydrostatic pressure[1] and it seemed apparent to all who examined the case that it would require much more force to reduce the intussusception with the conditions present; for the same reason insufflation with air was omitted. The conditions we found upon opening the abdomen fully confirmed our previous conclusions.

*Case 2.*—Isaac Libin, a German laborer 32 years of age, who had formerly always enjoyed good health, came under my care January 29, 1893, giving the following history: Five days before, while walking in the dark, he stumbled and fell into a ditch two or three feet deep. He experienced a slight amount of pain in the left inguinal region but paid no attention to it. Two days later he began to suffer throughout the abdomen, the pain becoming very severe about twelve hours before I saw him. The patient's abdomen had become tympanitic and he had suffered from nausea. There had been no evacuation of the bowels for five days and no passage of gas. The patient had the appearance of a strong healthy man suffering from a very severe acute disease, giving him an anxious look.

There was a globular enlargement in the lower part of the abdomen, a little to the left of the median line. The patient suffered severe colicky pains and requested that something be done at once. Cathartics and enemata had been administered for two days with great persistence but without effect.

My diagnosis in this case was volvulus, probably of the sigmoid. Two hours, and one hour, previous to my seeing the patient, my assistant had given him hypodermic injections of morphia, one-fourth of a grain each time to control the pain.

The skin covering the abdomen was at once cleansed, disinfected and shaved.

An incision was made in the median line, at first three inches long and enlarged to twelve inches after the preliminary examination. A volvulus of the sigmoid flexure was easily discovered. The intestines above this volvulus, both large and small, were considerably distended, but the portion of the colon composing the volvulus which was apparently two feet in length, was enormously distended having the appearance of an inflated stomach, its diameter being nearly twelve inches. It was impossible to reduce this volvulus within the abdominal cavity; it was therefore permitted to protrude through the incision, when it was reduced by making a half turn. It was again impossible to return the largely dilated intestine into the abdominal cavity; consequently an assistant carefully dilated the sphincter-ani muscles and introduced a large soft rubber tube, similar to a stomach tube, into the rectum and up into the dilated colon. This permitted the gas to escape, which at once reduced the size of the intestine sufficiently to allow its replacement in the abdominal cavity. The intestines had in the meantime been protected by the use of towels wrung out of warm sterilized water.

The abdominal wound was closed with silk sutures grasping all the layers of tissue of the abdominal walls. The rubber tube was left in place in order to secure the continued escape of gas. The operation was completed in fifty minutes.

No food was administered for forty-eight hours: at the end of this time the patient was given small quantities of milk and lime water every two hours. The temperature rose to 101.4 F. during the first twenty-four hours after the operation. The pulse never exceeded 116 beats per minute. After the second day the temperature remained normal, and the pulse varied from sixty to ninety beats per minute. After the fifth day the bowels moved daily under the use of enemata. The patient was limited to liquid diet and was advised to be careful about his food for several months after leaving the hospital. The wound healed primarily and the patient was discharged from the hospital in an excellent condition March 1, 1893, just thirty days after the operation.

This case illustrates the principle laid down several years ago[2] by von Wahl, and explained experimentally by his assistant,[3] that the presence of an abdominal dilatation and fixation, of an intestine, perceptible by inspection or palpation, indicates the presence of strangulation. It is plain that relief can be obtained only by means of an operation in patients suffering from a strangulated intestine. It is claimed that in very rare cases the patient has been relieved by the formation of adhesions followed by ulceration, causing an anastomosis; but this seems so unlikely to occur that the surgeon can not hope for such an issue in any given case. In this case peritonitis had not occurred from the introduction of microörganisms[4] into the peritoneal cavity through the walls of the intestine; a serious condition which would undoubtedly have followed had the operation been postponed for several hours.

The advantage derived from stretching the sphincter-ani muscle and the introduction of the rubber tube into the enormously distended colon in this case should not be under-estimated. It not only enabled me to replace the intestine with greater ease and less strain upon the patient, but it prevented the further accumulation of gas in the colon after the operation.

The contractile power of the circular muscles of the colon had been much lessened by the over distention; notwithstanding this, gas passed freely through and along the sides of the rubber tube which was left in place for four days, being moved slightly several times a day to prevent harm from pressure.

When emptied of gas and replaced, it did not seem necessary to fix the sigmoid to prevent a recurrence, because the intestine maintained its position without any support. In this case this could not have been improved by forming folds of meso-colon parallel with the gut[5] as this would have caused a bunch-like arrangement which in turn might have interfered with the fecal circulation. Suturing the meso-colon to the parietal peritoneum[6] or stitching the colon itself in the same way with a few sutures[7] was contra indicated by the condition of the intestine resulting from the enormous dilatation. It seemed to me that the least possible amount of disturbance of the intestine or its mesentery would be of especial importance in preserving the organ.

No further attempts at irrigation or insufflation were made before proceeding to operate, because this method appears to be of very doubtful value, except very early in the treatment of volvulus, for the reason that one cannot determine the power of resistance of the diseased intestinal wall.[8]

Notwithstanding the fact that it has been demonstrated upon the cadaver long ago[9] that volvulus can be reduced by insufflation of air, the conditions are so different that experiments on the cadaver are of very little value.

The use of massage[10] seems too dangerous and too little promising to be considered under the condition in which I found the patient. Moreover, large enemata had been employed patiently and persistently before the patient came under my care.

*Case 3.*—In the night of Febuary 27th, 1893, a neighboring physician requested me to see Mr. Daniel B. of 326 Mohawk St., in consultation with him. The patient was 81 years old; had always been well and was at the time in fair general condition, with the exception of showing symptoms of acute shock.

Four days previously he had suddenly experienced a severe abdominal pain at a point a little above and to the right of the umbilicus. The severity and the location of the pain suggested biliary colic to the attending physician. An anodyne was prescribed and the pain disappeared. The patient remained quiet and suffered but slightly during the following two days, but on the next day the pain became more severe, and during the day of my visit had increased in violence notwithstanding the use of morphia. The patient had been nauseated all day, and had vomited repeatedly for six hours. During the past two hours he had vomited sturceraceous matter.

I found the abdomen distended uniformly, and there was no point of dullness upon percussion. The patient was perfectly rational; his temperature was 99° F.. his pulse, 120 beats a minute.

The diagnosis of intestinal obstruction in the region of the small intestine was made, but there was nothing in the history or the conditions present to suggest an anatomical diagnosis.

Preparation for laparatomy were made at once because the shock had increased very markedly during the last two hours. The patient did not take ether or chloroform kindly; his pulse increased and his breathing was very irregular; the abdominal muscles did not relax at any time during the operation. An incision six inches in length was made in the median line, extending downwards from a little above the umbilicus. A reddish fluid similar to that contained in a hernial sac of an old strangulation, escaped upon opening the peritoneal cavity. The intestines were severely distended, and several loops showed marked congestion and roughness of the peritoneal covering.

Introducing the hand into the peritoneal cavity I at once found a hard mass in the left iliac region. Opening the wound over this point by means of blunt retractors, I found a loop of small intestine about one foot in length, which had slipped through beneath a Meckel's diverticulum, originating from a fold of the ileum, and being attached by its apex composed of a fibrous band, to the mesentery. The adhesions were very firm, and had evidently existed for years. It was impossible to reduce the intestine which had become strangulated, consequently I ligated the adhesions double with strong fine silk, and cut between the two ligatures.

On account of the patient's age and his depressed condition I did not deem it wise to prolong the operation by removing the diverticulum. The loop of intestine did not appear sufficiently injured to demand a resection; I therefore completed the operation by sponging out the abdominal cavity and closing it in the usual way.

The operation was completed at one o'clock in the morning, having occupied forty minutes. The patient died thirteen hours after the operation without recovering from the shock, although he was rational to the end. He had several evacuations of the bowels through the day, but the vomiting continued. This might possibly have been avoided, had the patient's stomach been emptied and irrigated through a stomach tube previous to the operation. This should never be neglected if the patient has vomited freely; and particularly if there has been vomiting of sturceraceous matter.

It is likely that the loop of intestine slipped through the opening on the first day, but that it did not become strangulated until about twenty-four hours before the operation, the cause being an increase in the œdema of the band and the intestine. In a younger patient the prognosis would have been very much better.

It is questionable whether an earlier diagnosis might not have been possible. It was, of course, obstructed by the fact that the pain was referred to the region of the gall bladder at first, and the cessation of pain after the use of morphia. The absolute obstruction to the passage of feces and of gas might have sufficed in completing the diagnosis. It is possible that careful auscultation[11] might have determined the seat of obstruction.

There was no congenital deformity[12] in any other part of the patient's body, which occasionally makes it possible to form a probable diagnosis of obstruction due to a Meckel's diverticulum. Besides the classical signs and symptoms of acute intestinal obstruction viz: (complete constipation; vomiting, first the contents of the stomach, then bile, then intestinal contents; if the obstruction was high, or if peritonitis had occurred; periodical pains; localized tympanitis early, general tympanitis later; violent peristalsis above the seat of obstruction); I noticed in each of these cases an absolute abhorrence of any form of food, and a constant desire for water.

The important points regarding this subject, seem to lie in securing as accurate a history as possible regarding previous sickness and especially previous attacks of a similar character; also the habitual condition of the patient's bowels. The history of an injury or of an over exertion is important. The apertures at which herniæ occur should be carefully examined and also a rectal examination should be made. The abdomen must be inspected for the recognition of violent peristalsis, which may determine the point of obstruction because peristalsis is entirely above that point. Irregularities in contour should be observed. The abdomen should be palpated in order to determine the presence of any point of resistance. Auscultation should be practiced patiently because there is no peristaltic murmur at the point of obstruction.

The abdomen should be percussed because a metallic sound can sometimes be elicited from a point above the obstruction, and a tympanitic sound over the strangulated intestine.

If a loop of intestine is strangulated, the patient has the general appearance so familiar to us in strangulated hernia. If the abdominal walls are tense, infection of the peritoneum has already occurred.

As soon as the diagnosis has been made these patients should be operated upon, first having tried carefully the use of injections, insufflation and massage to a safe extent, and that only at an early stage of the disease. Strangulation is sure to follow, which will permit the transmission of microörganisms into the peritoneal cavity. The intestine will become paralyzed by over distention and some portions may become gangrenous.

It is well to operate during the first twenty-four hours[13] after the occurrence of an acute intestinal obstruction.

**Dr. Henry O. Marcy**, Boston—I wish to put emphasis on the matter of washing out the stomach prior to operation. I have lost two patients on account of the severe vomiting; there is a constant pouring out of liquids embarrassing respiration; it is astonishing how much fluid is poured out of the stomach, and I am glad the writer gave prominence to this practice of preliminary washing out.

**Dr. Davis**, of Birmingham Ala.—Washing out of the stomach is perhaps too much emphasized. If it is done there is again filling in a short time, and we find that not as much relief has been afforded as we had expected. I regard obstruction of the bowels as not so frequent an occurrence as we have been led to believe by the teachings of the older authors. I believe many of them are cases of peritonitis, although I have no intention of questioning the diagnosis reported by the authors. It is my experience in operating on many so called cases of obstruction that the majority of them are cases of peritonitis due to appendicitis. Obstructions from mechanical causes are, I think, rare.

[1] Dr. J. D. Mortimer, Lancet, May 23, 1891.

[2] v. Wahl, Centralblatt fur Chirurgie 1889, No. 9. v. wahl, Langenbeck's Archiv. fur Klinische Chirurgie, Vol. 38.

[3] B. Kader, Langenbeck's Archiv. fur Klinische Chirurgie, Vol 42.

[4] Paul Reichel, Deutsche Zeitschrift fur Chirurgie, Vol. 35.

[5] Senn, Medical News, 1889, and Intestinal Surgery, p. 104.

[6] Roser, Centralblatt fur Chirurgie 1883, No. 43. Nussbaum, Deutsche Chirurgie, 1880.

[7] Braun, Archiv. fur [illegible]

[8] Frederick Treves, [illegible] 29, 1885.

[9] J. Heiberg, Vircho [illegible] Vol. 54, 1872.

[10] Johnathan Hutchinson, Archives of Surgery, London, Vol. 1, 1889.

[11] L. Rehn. Langenbeck's Archiv. fur Klinische Chirurgie, Vol. 43.

[12] Oderfeld, Lancet, Jan. 30. 1892.

[13] Obalinski, Archiv. fur Klinische Chirurgie, Vol. 38.

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# THE RELATIVE MERITS OF THE PRESENT METHODS OF TREATING PYELO-NEPHRITIS.

Read before the Section on Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

BY JOSEPH PRICE, M.D.
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The old application of "surgical kidney" to the affection I have taken as the theme of this paper is certainly one which in the light of its former fatality could not have been better chosen by the critics of surgical efficiency to proclaim their jest satirical upon a disease whose only termination was death.

It was a veritable *lucus a non lucendo*. Surgical kidney, as the title took its origin, came to be so designated from its frequent genesis from dirty sounds and careless irrigation of the bladder, and from this standpoint was certainly an opprobrium of surgery in another sense. Coming from strictly pathological causes within the economy, it could not always be attributed to faults of the surgeon, and it is the treatment of these lesions to which the surgery of the present day only should perforce be directed. No modern surgeon, deserving the name, should ever endanger the life of any patient by an approach to the dirty practices *in the dawn of surgery*. With the pathology of the affection I shall deal but briefly, asking you to remember that suppurative nephritis at times occurs without preceding implication of the ureter or pelvis of the kidney.

If, however, this is the case, it is easily understood how, unless careful attention be paid to the general symptomatology, the real nature of the disease may be overlooked, since the urine passed through the catheter from the pelvis of the kidney is acid and without odor of decomposition. The multiform nature of the causes of this affection puts it in the list of diseases especially interesting to the general practitioner, and makes it necessary for him to hold constantly in mind the *surgical* nature of the affection, as treated by modern surgical methods. Many a fatal case of this disease is so only by neglect of this fact.

Incision and drainage of the kidney in the early stages of suppurative disease are not more dangerous than incision and drainage anywhere else in the economy, and it is only delay that makes the operation more extensive, and therefore, more dangerous, both on account of the suppurative process *per se*, and on account of the constantly increasing danger of the final total loss of the entire organ.

The disease is to be differentiated from simple disease of the bladder, from acute Bright's, pyemia and the like. It will be necessary for the surgeon and physician to hold in mind the affections where this condition may obtain coincidently, and the differentiation then is made generally by exclusion, though it not rarely happens that the disease is found under conditions that render its presence very obscure. The microscopic examination of the urine is never to be neglected, and the conditions of this taken together with the history and general symptomatology, is likely to be sufficient to establish the diagnosis.

Aspiration of the kidney is not to be lightly considered. It is something on the order of aspiration in appendicitis. The field is great and the question of exactly reaching a point that will decide the matter, *is one of doubt*. At any rate, if puncture is made and any other *fluid than blood escape*, incision is at once to be insisted upon, for the reason that any escape of an irritating nature, either into the peritoneum or perineal structures, is fraught with danger.

The anatomical dangers apart from those indicated, are puncture of the intestine, which is generally in front and adherent to the tumor, and puncture of important blood vessels if the trocar is too long. The liver may also be wounded, and puncture near the ribs is to be avoided in order not to wound the pleura.

When the diagnosis of pus in the kidney is established, operation is as much indicated for abscess here, as for its opening elsewhere. It is to be urged in every case by every surgeon having the light of the present understanding of the nature of the disease, and comprehending the results of surgical interference. The nature of the operation selected should be that which will best insure the ultimate safety of the patient with the least risk. In a large pus sac where the whole kidney is involved, the condition of affairs is extreme, and the operation that will give present relief is the one generally to be chosen. Cases will get well with incision and drainage, that cannot possibly stand the shock of prolonged surgical operation. But another class of cases will present themselves—those in which the suppurative process has advanced to a less degree. Here the question of choice will in the minds of many be an open one.

Let us see what are the operations suggested: Complete extirpation, and simple nephrotomy, with drainage. Where complete extirpation is to be considered, the condition of the patient is never to be lost sight of. If the kidney can in any way be preserved, no matter if only a small portion of its whole is intact, it is by all means to be urged that this be done. This is especially to be remembered in the occasional presence of a horse shoe kidney, whose removal will most surely be followed by death from uremia. Primary extirpation of the kidney is never a simple matter. In the first place the adhesions are vast, often dense and multiform, and the patient is in little condition to stand the shock of operation.

Now, if the sac be evacuated and drained, there is a distinct gain to the patient in several ways. First, the pus is gotten rid of, and second, there is a shrinkage of the tumerous mass, with a retraction of the adhesions. Again, constitutionally, there is prompt improvement, and secondary operation if necessary is better stood. The operation by reason of the prolonged anæsthesia is dangerous to the remaining kidney, and hence the salvage of the remaining organ should not be unnecessarily risked when nothing is gained and much is to be lost, subjectively and objectively.

In the surgery of the kidney as in that of every other organ, the greatest simplicity should be sought. Simple nephrotomy in the presence of stone in the kidney, is not to be feared under ordinary circumstances, and so any other interference in which the adjacent structures are not involved is evidently of less risk than operations in which both ligation and eventration is required.

Surgical shock, of itself of the greatest importance here, owing to the generally bad condition of the patient; is enhanced by shock from hemorrhage, usually very great in large tumors of the kidney. In the weakened circulation and loss of power of resistance, heart clot from embolus is more apt to occur if the extreme operation is insisted upon in the weakened state of the patient. Heart clot it is to be remembered, is one of the urgent dangers in the removal of the kidney, and its complete ablation in greatly exhausted conditions is to be deprecated. Ideal surgery is not here logical, unless it be conceded that that surgery only is ideal which preserves life, as *I have so often insisted.*

The general logic then of the operation, as I have here endeavored to state it, is a constant effort to simplify every condition necessary both for success and the patient's safety. Primary drainage and packing, with subsequent removal if necessary, seems best to fulfill these indications. In order more vividly to impress the force of this argument let us look at the statistics of the mortality in kidney operations. Of seventy-two cases thirty-two recovered. The chief causes of death were collapse, five; peritonitis, four; peritonitis, complicated, three; exhaustion, three; hemorrhage, two; anuria, three; carbolic acid poisoning, one.—2d ed. *Times*, 1883.

Of 100 cases of nephrectomy collected by Prof. R. P. Harris, the causes of death were as follows:

Peritonitis, eight; septic peritonitis, four; pyemia, two; septicemia, one; hemorrhage, three; secondary hemorrhage, one; uremia, six; pulmonary embolus, two; shock, seven; collapse, four; exhaustion, two; excessive vomiting, two; not stated, three.

Analyzing the causes of death we find that the factors of shock, hemorrhage, embolus, collapse, and vomiting enter largely into the mortality. These, it will be seen are all consequences of total ablation in the presence of serious general and constitutional trouble. If now we add to these the cases of peritonitis amounting in all to nineteen cases in 172, we have by this factor alone a showing of nearly an increase of .11 per cent. over what might be expected, aside from other causes in cases in which the peritoneum is not interfered with. The cases of hemorrhage amount to eight, being a mortality of about 5 per cent. again from causes avoidable in the extraperitoneal operation. The same logic is applicable to the cases of shock and exhaustion, which alone amount to sixteen, nearly 10 per cent. of all the mortality.

I have not cited cases in the body of the paper, reserving these for illustration and discussion.

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# WEST AFRICAN NATIVE FOODS.

BY ROBERT HAMILL NASSAN, M.D., D.D.

GABOON, AFRICA.

The vegetable foods of the natives of western equatorial Africa are various, but their principal carbohydrates, their two staves of life, so to speak, are the tuber of the cassava or manioc, (*Jatiopha manihot*) and the fruit of the plantain (*Musa sapientum*).

They grow also maize, yams, sweet potato, arum, gourds, squash, pumpkin, okra, beans, tomato, ground-nuts, eschalots, cayenne pepper.

Their agriculture in that part of Africa requires no general upturning of the soil. A spot having been selected in the forest adjacent to the village, the women first go through with long knives or matchets, and cut down all the underbrush and saplings. Then the men follow, felling the trees. These with their branches and dense foliage interlocked by a super-abundance of vines and lianos, impenetrably cover the acres of the chosen space and lie dying for some two weeks. This is done during that season that is without rain; so that, when on a chosen day, the dying mass is fired the billow of flame from twigs and smaller branches sweeping over the fallen trees, burns up all except the tree trunks and larger branches. The wood-ash is recognized as an aid to fertility, though its action is not at all understood.

Women then, with a small tool somewhat like a small trowel, hollow out holes at distances irregularly, of some six feet apart, about ten inches in depth and eight in diameter, and drop into each cavity a variety of the above mentioned plants and seeds, so that there shall be *succession* in growth. (This planting is made just before the rainy season begins.)

In that succession there is the plantain sprout. Its growth is slow. It will produce in from twelve to eighteen months; while young it needs the shade. This is afforded by the manioc shrub cutting which will produce in from four, six to eight months. But the manioc also needs shade at first. This is promptly provided by the maize and other broad-leaved vegetables, like the pumpkin, which grow rapidly and give to the ground, denuded of forest, the shade necessary to prevent its fertility being "burned out" by the sun's direct rays. The maize and other vegetables give the villagers something to live on during the interval of six months before the manioc is ripe; or, of six months more until the plantains have produced their fruit. These smaller vegetables having been eaten off, the garden finally contains little else than plantains and the second growth of cassava.

The manioc is the poisonous variety. As the woman, in gathering pulls up the shrub and plucks off the tubers, she immediately thrusts into the loosened earth a cutting of the stalk for another growth. The basket containing the tubers is set in a stream of water for three days that their poisonous quality may be washed out. On the third day the basket is carried to the village, the thick rind of the tubers is peeled off, and they thrown into a large wooden mortar. They smell quite offensively sour, having partly fermented. They are beaten with a wooden pestle into a white homogeneous dough-like mass, consisting of the starch grains, and the broken woody parts of the root. This dough is fashioned into rolls some sixteen inches long and two inches in diameter, which are then carefully tied up in plantain leaves. A large iron or brass kettle is set over a fire, a small quantity of water in the kettle, and the rolls are then arranged closely in it and covered over tightly with a package of plantain leaves to prevent the escape of steam. The effect of the steam permeating all parts of the rolls is to burst the starch grains. The manioc is now ready to be eaten. It is of the consistency of cheese; smells very sour; is practically the same as a thick, dark, coarse mass of tapioca pudding mixed with finely broken pieces of woody fiber. It is eaten by the natives with salt, native cayenne pepper ("chillies"), and a gravy of oily nuts. It will keep good for a week in a dry place; or on the drying-rack over their fires for a much longer time, becoming too hard to be cut. When spoiled by mold, it can be made again fit for use by re-boiling.

When these same rolls are sliced and roasted in ashes they taste somewhat like bread, and can be eaten as such with butter; or they can be fried in any oil, as toast. The soaked tubers, when first peeled of their rinds, instead of being cooked at all may be placed in the sun to dry, and then are preserved for many days over the drying shelves, and are then boiled for use as occasion may require, without beating them into dough. Or the tubers, without being first placed in running water, having been peeled, may be boiled, sliced into "chips" (called *ngwese*), soaked for one night in water and eaten without further cooking with salt and pepper. Another method is to have the tuber, just as it is taken from the earth, without any other preparation than peeling, grated, the pulp washed and dried in the sun, making a coarse "farina," which is used for convenience on journeys. This meal needs no other preparation than to have scalding hot water poured over it, and it then swells into a thick pudding-like mass. These several ways of preparing the manioc tuber make an agreeable variety for taste and convenience.

The plantain stalk produces but one bunch of fruit. There is therefore no need to carefully cut off the hanging bunch, which contains from twenty to forty "fingers." (A banana bunch—the *musa paradisaica*—has from 50 to 200.) The mother-stalk is then cut down. But around its base are springing up several shoots, like "suckers" of corn, varying from one foot to four feet in height. The tallest of these "children" immediately takes its mother's place, and in six months will bear its one bunch, to in turn have its place taken by the next larger of the suckers. This process goes on indefinitely, and if proper care were taken of the garden no new plantation would need to be cut; the same garden would last forever. The fruit of the plantain is rarely allowed by natives to ripen. It is cut unripe, and is boiled. It contains much starch, though less than the manioc, but is more healthful than the latter. It may also be eaten roasted.

If allowed to become over-ripe, the plantain is rarely eaten by natives. But by foreigners it is liked, being sliced and fried.

With these two articles of food to depend on, and varied by modes of preparation, the natives obtain a still more comfortable variety by boiling or roasting maize ears, eating the grains from the cob, boiling or roasting tubers of the yam and of the calladium (*Arum esculentum*), our so-called "elephant" ear, called by the natives "koko," and "eddo," the common vegetable of the South Sea islands.

Almost the only two modes of our native cookery are boiling and roasting in ashes.

Greens of various leaves are used, especially the leaves of manioc and the unexpanded leaf of the calladium; care, however, being taken to pour off the first water in which this arum is boiled, as, like our Indian turnip, it is acridly poisonous; as also is the case with the tuber of the eddo (*calladium*). A rich pudding is made from the kernel of the seeds of a gourd. The hard rind of the ripened gourd itself is also used, being carved into cups and bowls and spoons. The kernels of the seeds, free from the shells, are beaten into a paste. This paste, seasoned with red pepper and laid in strata with slices of dried fish, is broiled in a bag of plantain leaves. It is quite oleaginous; foreigners can digest but little of it, though its taste is agreeable.

The palm nut (*Elocis guiniensis*) yields a rich, oily pulp that yields the palm oil of commerce, enormous quantities being exported for the making of soap and lubricating oil. The pulp is eaten by all the natives. When prepared in a cleanly manner it is relished by most foreigners, eaten with rice and an abundance of currie or of "chillies" (cayenne pepper), a fowl or some other meat, fresh or dried, being stewed with it. It is quite fattening, the natives promptly becoming plump under its use. The fresh nuts are also eaten, roasted in hot ashes.

A hard cake made from the oily kernels of a fruit called *odika* (the wild mango) is universally used by the natives for making a rich gravy. I like it but most foreigners do not.

In their meat diet the natives are variable. They are capable of eating a very great deal of meat, but are satisfied with even a little. But that little *must* be had, or they often will refuse to eat a meal of only vegetables. For inhabitants of a warm country, their longing for meat is remarkable. Their language has synonyms for our words for "famine" and "hunger;" it has also a third word, meaning *meat hunger*.

They have domestic animals—fowls, sheep and goats, dogs and a few cats. The sheep have no wool; only short straight hair. All these animals are kept for only special occasions—feasts, payment of fines, marriage dowrys, sacrifices to evil spirits in times of great danger (when only the blood is offered, the flesh being eaten by the village). For daily meat, the hunt is depended on. But when the hunt has been successively fruitless, a cat or dog must be utilized to supply the "meat hunger." There is therefore no over-production of these domestic animals.

Elephants, hippopotami, wild oxen, wild pigs, antelopes, gazelles, gorillas, chimpanzees, monkeys, crocodiles, alligators, etc., are all hunted. All these wild animals are eaten by the interior tribes, and with them not a pound of even the skin being thrown away. Literally, *every* part of the animal is eaten, except hoofs, horns and bones. But the coast tribes hesitate and do not care to eat the rat, snake, gorilla, chimpanzee and mandril.

The natives in their untaught state never fry meat. It is boiled or broiled. A third and very appetizing way is as follows: While a wood fire is being reduced to a bed of hot coals, there are prepared several thicknesses of large pieces of plantain leaf. Into these, curved as a bowl, is poured a cup of water. The meat, cut into small lumps, is laid in successive strata with salt, red pepper and crushed oily nuts or preferably, *odika*. The edges of the leaves are then gathered up and tied together tightly as a bundle. This bundle is set on the coals. There is no flame. Before the several layers of thick fleshy leaves can be charred through, the water is partly turned into steam, which permeates the whole mass of flesh, cooking each fiber without burning or scorching, and carrying to the center of each piece of meat the aroma of the seasoning. With the juices of the meat, the residuum of the water and the oil of the melted nut is produced a most tasty sauce. I have nowhere, even in civilization, eaten any preparation of meat that is so clean, so rapid and so attractive to a hungry traveler as this native way of steaming meat. It is used for any meat; but I have found it especially suited to coarser varieties, and is a most agreeable way of preparing fish.

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## PNEUMONIC FEVER—ITS SYMPTOMATOLOGY.

BY EDWARD F. WELLS, M.D.

CHICAGO.

Cough is present in almost every case of pneumonic fever,[1] usually beginning with the very inception of the disease and continuing, with more or less frequency and severity, until the inflammatory exudate has been completely removed from the lungs.

This symptom was present in all of seventy cases analyzed by Chomel[2]; in all of Dietl's[2a] 750 cases; in 90 per cent. of Grisolle's[3] cases and in 95.8 per cent. of my series of cases.

It occasionally precedes other symptoms by a few hours, or even several days.[4] In such instances there is usually a premonitory bronchial catarrh. In a few cases the cough may be so slight and insignificant as to escape the notice of the patient and his attendants unless their attention has been particularly directed to it. In rare instances it may be quite absent throughout the attack.[5]

A Swede, aged 49, had a chill, followed by fever and sweating, every third day for three weeks. For a week he had been "feeling bad all over," with anorexia, sleeplessness and a somewhat severe constant pain in the right side and under the sternum. On May 17, 1886, he had a chill, followed by high fever, rapid and irregular pulse, great thirst, pain under the sternum, cephalalgia, mental dullness—answering questions hesitatingly and often irrelevantly, some dullness over the right lung, crepitant râles diffused throughout this lung, dyspnœa, but no cough or expectoration. *He died suddenly at 7 P. M.*, May 20, and at the autopsy the right pleural cavity was found obliterated and the upper and middle lobes of the right lung hepatized. The lower lobe was emphysematous, congested and œdematous.[6]

Cough was absent in twenty-one of my cases, as shown in the accompanying table.

Cough is less constantly a symptom in the aged,[7a] cachectic and insane than in healthy adults. In such patients a previously existing bronchitic cough may become diminished or entirely suppressed upon the advent of pneumonic fever. This is also true of the paroxysmal cough of pertussis, which is replaced by that characteristic of pneumonic fever, to again resume its original character when the pneumonic inflammation shall have undergone resolution.[8]

A female child, aged 3 years, in the second week of an attack of whooping cough, took to vomiting, had a profuse diarrhœa, became stupid and comatose, and greatly prostrated. The pulse was accelerated, the breathing hurried and the temperature considerably elevated. Sighing was a prominent symptom. When examined on the sixth day there was dullness on percussion and bronchial respiration at the base of both lungs. The symptoms continued for nine days when they became abruptly ameliorated. During this period there was no cough, although it had been very severe, and resumed its former characteristics after the subsidence of the pulmonary symptoms. Complete recovery ensued.

Cough may be delayed in its appearance, in the presence of definite physical signs and pronounced symptoms, for several days—as many as twelve in a case reported by Ray.[9]

With the profound prostration not infrequently attending this malady the cough often diminishes in frequency and power, or ceases altogether. Such cases very seldom recover.[10]

The character of the cough varies somewhat with the age, condition and temperament of the patient and in different epidemics,[11] but, contrary to the opinion held by some[12] it is usually peculiar and quite distinctive of the malady in question. At the beginning of the attack it is dry, frequent, short, restrained and painful. In some cases it is so frequent as to accompany almost every expiration, especially if the inspirations are at all deep. The length of the cough varies with the depth of the inspiration, but the impression produced upon the listener is that it is short and hacking.[13] In children it is often slight and insignificant during the incremental stage of the disease,[14] although many are made very restless and irritable by the constantly recurring and teasing cough.[15] After a few hours the cough becomes moist and is usually accompanied by expectoration. It is however, still short, restrained and painful. Later when the disease is at its height it is less frequent, more open, less painful and the patient does not so persistently attempt its restraint. It can not, however, be, as yet, called "free," inasmuch as the inflamed lung is not susceptible of being fully inflated, and sufficient air is not expelled from behind the immovable obstruction to cause a forcible explosion. If the cough is very painful and accompanied by only a scanty expectoration it is apt to be more frequent, less paroxysmal, drier, more restrained, shorter, less severe and in a higher key than when there is a free bronchial flux and but little pain.[16]

In the latter stages of the attack the cough is, usually, very powerful, paroxysmal and distressing. In children it may even cause vomiting,[17] and sometimes resemble whooping cough.[18] The severity of the cough, however, is no measure of the gravity of the case, for there are many dangerous cases with but little cough, and *vice versa*. A severe or paroxysmal cough, coming on at the end of the exudative stage is, although an element of danger,[19] of good import, whilst the same kind of a cough during the height of the fever is of evil augury.

The cough has been known to be so powerful as to cause separation of the sternal epiphyses from the ribs in children [20] and fracture of the ribs and sternum in older persons.[21] Heister,[21a] who was probably a little credulous, tells us of a clergyman's wife who coughed her perineum open.[21b]

One of my patients, a fragile little girl of 5 years, who had already suffered three fractures of the long bones—the clavicle when a year old, the fibula at three years and the femur six months later—developed a very powerful cough during convalescence from a very severe attack of pneumonic fever, locally affecting the entire left lung. After this had continued for four days my attention was called to a prominence of the sixth rib on the right side in the axillary line. There was evidently a partial fracture of the rib at this point. The bulging was not easily reducible and remained permanent.

TABLE I.—SHOWING CASES OF PNEUMONIC FEVER WITH ABSENCE OF COUGH.

| Number. | Age. | Sex. | Previous Condition. | Character of Attack. | Range. Pulse. | Range. Resp. | Range. Temp. | Seat. | Duration. | Result. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 46 | M. | Good . . . . . | Latent . . | 80–110 | 20–26 | 99–101° | L. base . . | 9 | R. | |
| 2 | 1½ | “ | “ . . . . . | Masked . . | 120–160 | 36–48 | 102–105° | Duplex . . | 5 | D. | Red hepatization. Meninges congested. |
| 3 | 21 | “ | Dissipated . . | Typhoid . | 120–146 | 26–46 | 101–105.7° | R. base . . | 17 | R. | |
| 4 | 46 | “ | Typhoid fever | Latent . . | 100–132 | 26–32 | 101–103 5° | L. base . . | 15 | R. | |
| 5 | 84 | F. | Senility . . | “ . . | 80–90 | 18–22 | 98–100° | L. entire . | 3 | D. | Lung disorganized. |
| 6 | 64 | M. | “ . . . | “ . . | 60–92 | 24–30 | 101–103° | R. base . . | 22 | D. | |
| 7 | 13 | F. | Good . . . . . | Acute . . . | 100–120 | 20–32 | 102–104.5° | L. apex . . | 6 | R. | Coughed twice during convalescence. Menstruating for first time. |
| 8 | 81 | “ | Senility . . | Latent . . | 80–110 | 22–26 | 101–103° | R. apex . . | 7 | R. | |
| 9 | 82 | “ | “ . . . | “ . . | 100–112 | 24–26 | 99–100.5° | Duplex . . | 5 | R. | Same patient as case 8. |
| 10 | 21 | M. | Good . . . . . | Acute . . . | 100–140 | 25–40 | 102–105° | R. entire . | 10 | D. | |
| 11 | 51 | “ | Insane . . . . | Latent . . | 120–160 | 30–52 | 100–104° | L. base . . | 4 | D. | Mania. Pericarditis. |
| 12 | 27 | “ | Good . . . . . | Mild . . . | 60–92 | 16–22 | 99–101° | “ . . | 7 | R. | |
| 13 | 3 | F. | Pertussis . . . | Latent . . | 100–140 | 36–48 | 102–105° | Duplex . . | 9 | R. | Cough of pertussis ceased suddenly with advent of pneumonic inflammation, to return on ninth day. Diarrhœa. Coma. |
| 14 | 69 | M. | Senility . . . | “ . . | 80–108 | 18–24 | 103–103 5° | “ . . | 4 | D. | |
| 15 | 77 | “ | “ . . . | Low . . | 100–116 | 20–28 | 100–101° | L. base . . | 7 | R. | |
| 16 | 4 | F. | Diphtheria | Mild . . . | 100–130 | 28–36 | 99–101° | Duplex . . | 5 | R. | Following tracheotomy. |
| 17 | 57 | “ | Cachectic . . | Latent . | 120–160 | 30–40 | 101–104° | R base . | 2 | D. | Cancer of uterus. |
| 18 | 69 | M. | Senility . . . | “ . . | . . . | . | . . . . . . | Duplex . . | . . | D. | Sudden death. |
| 19 | 97 | “ | “ . . . | “ . . | 70–92 | 20–26 | 102–102.5° | R. base . . | 10 | R. | |
| 20 | 22 | “ | Idiocy . . . . | “ . . | 100–120 | 20–34 | 100–103.5° | L. base . . | 7 | R. | Following an epileptic fit. |
| 21 | 37 | “ | Typhoid . . . | “ . . | 96–112 | 27–30 | 101–103° | “ . . | 6 | R. | |

In rare cases emphysema of the cellular tissue or mediastinum $x^{22}a$ may follow a severe fit of coughing.[22] A soft, crepitating swelling forms on either side of the neck, extends gradually under the skin and becomes general. This accident is most frequent in childhood, adds considerably to the danger, and in case recovery ensues two or three weeks' time is required for the reabsorption of the diffused air.

A male child, three years of age, was taken with the ordinary symptoms of pneumonic fever, June 1, 1889. The malady pursued a comparatively mild course, and convalescence was declared on the fifth day. The cough, which had all the time been very severe, now became exceptionally severe and explosive. On the eighth day an emphysematous swelling appeared in the right side (the one affected) of the neck, which spread over this side of the chest. It disappeared in a week, and the child fully recovered.

Champneys[23] has experimentally investigated this subject and found that when the lung is over-distended air first makes its way beneath the pulmonary pleura, stripping it up, and passes along to the root of the lung, to the mediastinum and along the cervical fascia to the subcutaneous cellular tissue in the neck. $x^{23}a$.

Rupture of the lung, with pneumothorax, is a possible result in non-destructive local pneumonic processes, although my experience or reading has never included such a case.[24] The breaking down of softened lung tissue so as to form an abscess is a contingency by no means remote.[25] Other effects may follow violent coughing, e.g., sub-conjunctival hemorrhage, detachment of the retina,[26] hernia or the strangulation of an existing one,[27] rupture of the diaphragm, aneurism or the rupture of an existing one, etc.; but such accidents are exceedingly rare.

A merchant, aged 69, was taken, Oct. 10, 1877, with a chill, followed by cough, fever, pain in the right side, rusty expectoration, etc. There was dullness over the lower half of the right lung, and in this region the respiratory sounds were feeble, but distinctly tubular in character. They were rendered louder by forced inspiration and expiration. His cough was very violent and came on in sudden explosions, in one of which he suddenly expired on the sixth day and at a time when there were no alarming symptoms whatever. An autopsy was not allowed, but there can be but little doubt that the sudden death was due to cerebral apoplexy, caused by the violent cough.

The cough is never hollow or cavernous, as in phthisis, unless cavities are actually present. A cough of ordinary characteristics, which becomes loose and rattling, and afterwards cavernous, is almost pathognomonic of abscess.[28]

The characteristics of the cough in this disease had, with the older clinicians, a semiotic value which the discovery and cultivation of the modern methods of physical diagnosis has, unfortunately I believe, sadly depreciated. Nevertheless the clinical importance of this symptom is very great, and its features are deserving of the most careful consideration.

Cough is a modified respiratory act in which a deep inspiration is followed by a forcible expiration, with, for a time, closure of the glottis, so that any substance, solid or liquid, may be expelled from the glottis by the rapid rush of air upon the sudden opening of the glottis toward the latter end of the act. It is caused by irritation of branches of the vagus distributed to the nose,[29] pharynx, larynx, trachea, bronchi,[30] pleura, œsophagus[31] stomach, diaphragm,[32] liver,[33] spleen,[34] ear,[35] etc. In pneumonic fever the cough is due to the irritation from the inflammatory products effused upon the surfaces of the pleura and the respiratory tract.[36] It is aggravated by irritation of the neighboring organs[37] and movements of the lungs, and is allayed by rest.

A little girl of 4 years gradually developed a short, incessant and annoying cough. It was so frequent that not five waking minutes passed without her coughing one or more times. When 8 years old she sustained an attack of pneumonic fever, locally affecting the apex of the right lung, which ran an ordinary course and terminated by crisis on the fourth day. During this time her habitual cough was replaced by that characteristic of pneumonic fever, but with the advent of convalescence it again returned. Investigation showed the chronic cough to be due to a large mass of inspissated cerumen in the right auditory meatus, the removal of which instantly and permanently relieved it.

I have long shared the opinion of Juergensen[38] that the very frequent, dry, painful and teasing cough of the early stages of pneumonic fever is very seldom, or never, beneficial, is always disagreeable and frequently detrimental to the patient. It is clear that when fluids accumulate in the bronchi, cough of frequency and force sufficient to expel them is necessary, but when the bronchial secretions are scanty or absent it would be difficult to indicate in what manner a frequent and harassing cough can possibly benefit the sufferer. Not only is such a cough painful and disturbing, but from the insufficient rest which it entails, and the pulmonary excitement occasioned, I am convinced that it is decidedly injurious to the patient.

### EXPECTORATION.

Expectoration, like cough, is a symptom which is usually present[39] to a greater or less extent in pneumonic fever, although it is sometimes altogether absent.[40] It is necessarily absent in those cases in which there is no cough, and in those persons, children mainly, who are unable to expectorate.[41] It is also frequently absent in those cases in which the cough is very weak, or infrequent, and in the senile,[42] latent,[43] rheumatic[44] and some other forms of the disease.[45]

It was absent in 5 per cent. of Chomel's;[46] 11 per cent. of Briquet's;[47] in 7.3 per cent. of Dietl's 750 cases;[48] in 16 per cent. of Wunderlich's 50 cases;[49] and 6 per cent. of my cases. In my own cases I have excluded young children.

Buhl[50] thinks that absence of expectoration is due to the fact that the exudation matter is confined to the air cells and that the finest bronchial tubes remain free from inflammatory implication.[51] In every one of my cases, however, the apparent cause was weakness or absence of cough. It has been asserted that expectoration is absent in a larger proportion of cases when the apex is the part of the lung locally affected than when the base is inflamed.[52] It is probable, however, that if such be indeed the fact, other reasons, such as weakness, etc., might be brought forward to account for the phenomenon without attributing it to the local seat of the disease.

Gairdner[53] has advanced the theory that the bronchial tubes act in a manner similar to the bowels and eject their contents by peristalsis. Accepting this theory, which is unsupported by proof, one might readily suppose that expectoration of bronchial fluids would be more difficult from some parts of the lung than from others.

Absence of expectoration has always been thought to be an unfavorable circumstance in pneumonic fever.

Galen[54] says that the most hopeless cases are those rare ones in which expectoration is absent. Avicenna[55] views this occurrence with alarm. Van Swieten[56] thought the inflamed lung was relieved and cured by the expectoration, and that its absence was one of the most unfortunate symptoms which could occur. Cullen[57] was of the opinion that recovery rarely occurred without expectoration. Absence of expectoration is thought by Jacobi[58] to be an almost inevitably fatal sign.[59]

If the absence of expectoration is due to blunted perception or lack of power to bring up matters in the bronchi it is a symptom of evil import, but if there is no material in the bronchi to be ejected the sign is not unfavorable, but rather the contrary.[60]

Chomel[61] thought that diarrhœa often took the place of the bronchial secretion in the cases with no expectoration. In none of these cases in my collection was diarrhœa a prominent symptom.[62]

In a considerable number of cases expectoration, although not absent, is present so scantily as to pass unrecognized unless special attention is directed toward it.[63]

In general, expectoration appears a short time after the beginning of the cough, but in some instances it is very late in appearing,[64] perhaps not until resolution has begun.[65] Again, it may be free enough in the beginning of the attack and so continue for a period, to be gradually or suddenly suppressed.[66] This is a very unfavorable symptom, inasmuch as it indicates a dangerous failure of the respiratory reflexes or of muscular power. This is especially the case if the other signs and symptoms indicate the presence of fluids in the air passages, extension of hepatization or increased severity of the general disease. Under such circumstances a speedily fatal termination may be safely predicted. I do not recollect ever having seen a patient recover under these conditions, and this appears to have been the experience of others.[67]

Andral,[68] with others, attributes the fatal issue in these cases to the occurrence of asphyxia from the accumulated secretions, but this is plainly an error. The parts of the lung which furnish these secretions are already practically impermeable to air, and certainly no great harm can come, *per se*, from the blocking up of the bronchi of these parts. Again, when such cases come to the autopsical table, the result fails to support the proposition that the bronchi of the other parts are filled to any extraordinary degree with these matters. Death follows the cause of the suppression, and this cause is a failure of the vital forces of the entire system and not of the lungs alone.

It has been supposed that the expectoration might be diminished or suppressed by profuse purgation,[69] unreasonable bleedings[70] and other perturbating and depressing therapeutic measures.[71]

The expectoration of pneumonic fever in its physical characteristics is quite peculiar to the disease, and is practically pathognomonic.[72] In the beginning it is white, frothy, viscid and often specked or streaked upon the surface with minute quantities of blood. The sputæ are transparent or translucent, have no definite shape, float upon water and do not adhere to the sides of the vessel, although they adhere slowly to each other. As the attack progresses the color gradually changes to a rusty tinge, the admixture of air is less and it is not so frothy, it becomes more viscid and the blood, which is present in greater or less quantity and gives the expectoration its color, is very intimately mixed with the other elements present. The sputæ are translucent or opaque, sink or float beneath the surface in water, run together and are so viscid that they not only blend intimately together, but they also adhere so tenaciously to the sides and bottom of the vessel that it may be inverted without the mass flowing out. They also cling closely to the sides of the mouth, teeth and lips, so that the patient is compelled to remove them with a cloth. This is the ordinary and typical expectoration of pneumonic fever after the disease has been fully developed.[73] It usually attains these characteristics in the first days of the disease and retains them until resolution begins. With the decline of the disease the sanguineous elements disappear from the expectoration and it becomes yellowish, creamy, less viscid and heavier than before. The sputæ are large, numular, sink in water and adhere together, but they no longer cling to the sides of the cup. The amount of the expectorate is at first small, increasing to a total of from one to six ounces[74] in twenty-four hours at the height of the disease, gradually diminishing afterwards[75] and disappearing entirely before convalescence is completed. It forms only a small part of the exudate to be removed from the air cells. This statement will be more fully appreciated when it is considered that only a small portion of the expectoration comes from the air cells, the major portion being bronchial secretion.[76]

The basis of the pneumonic expectoration is water, albumin, mucus, fat and salts, with which the other more or less adventitious elements are mixed. Water forms from 87.3 per cent. to 97.1 per cent. of the total quantity.

The percentage of water in four analyses made by Biermer[77] was 94.5, 87.3, 96.1 and 89.0 respectively. In three analyses made by Renket[78] it was 90.9, 97.1 and 97.1 respectively.

The percentage of water to the solids in pneumonic sputa bears a very close relation to the amount of water in the blood.[79] Albumin forms about 3 per cent. of the sputa.[80] It is derived from the alveolar exudation and is met with only after hepatization has begun. The viscidity depends upon the mucus, which is present in about 1 per cent.[81] It is supplied by the inflamed bronchial mucous membrane.[82] The salts constitute about 0.8 per cent. of the expectoration,[83] and of these the chlorides form about one-half[84]

According to Bamberger[85] pneumonic sputa contains no alkaline phosphates, while 10 to 14 per cent. of the salts of catarrhal expectoration belong to this class. In catarrhal sputa the soda is to the potash as 31:26, but in that of pneumonic fever it is 15:41. Sulphuric acid is present in the two forms of expectoration in the proportion of 3 to 8 respectively. The amount of nitrogen present is absolutely and relatively less than in phthisis.[87]

The expectoration is usually neutral or slightly alkaline,[88] although in rare cases I have found it acid.[89] The acidity, when present, is probably due to the presence of pneumonic acid, which is increased in pneumonic inflammation.[90]

Sugar[91] sometimes exists in the sputa in considerable quantities, due, probably to the same causes which account for the saccharine elements in diabetic urine.

Tyrosin has been found in the sputa of at least one pneumonic patient, unaccompanied by jaundice.[92]

Pneumonic expectoration usually has an insipid taste,[93] although it may be sweet from the presence of sugar, bitter from admixture of bile, salty from the presence of the chloride of sodium, especially during resolution, or so acrid as to cause soreness of the pharynx[94] and other mucous surfaces.[95]

The amount of blood contained in the expectoration varies infinitely. Some cases pursue their course with simply a mucus expectoration and unmixed with blood, whilst in others the sputas are so bloody as to be hemoptysical, with every imaginable grade between these extremes. Oxidation of the blood gives to the sputa the various shades of red, brown, yellow, orange, green, etc., through which it passes. The sanguineous element generally appears during the first two days of the attack, although it may be longer delayed, or even remain absent.

Grisolle[96] found that, in 131 cases, blood first made its appearance on the first day in forty-five cases, on the second day in fifty-six cases, and on the third and fourth days in fourteen cases each. Chomel[97] found blood absent in three of 125 cases. An uncolored sputa belongs to the history of certain epidemics, *e.g.*, the French epidemic of 1837.[98]

I have not met with any facts implying that the sanguineous elements are found in greater or less abundance in different states of the system, as to the amount and character of the circulating medium present, as in plethora, anemia, chlorosis, etc.

Juergensen,[100] however, is of the opinion that the expectoration is often hemorrhagic in the case of drunkards. Others consider the sanguineous element present in less quantity in the aged than in the adult.[101] In children, also, the expectoration is less bloody than at a later period of life.[102] It is true that in the case of young children we do not see the sputa, except sometimes as it is vomited, yet in almost every case it may be seen in this manner.

Actual hemoptysis in pneumonic fever[103] is rare,[104] although cases of great severity, even to fatality, have been observed.[105]

Peteaux[106] records the case of a robust man, aged 45, who was attacked with pneumonic fever and expectorated on the fourth or fifth day, at one time, a pint of bright blood.[107] At the autopsy, some days later, the ordinary appearances of inflammation of the entire right lung was found, but the point from whence the hemorrhage proceeded eluded discovery.

Hemoptysis may indicate the presence of coëxistent tuberculosis[108] or organic cardiac disease.[109] The ancients considered hemorrhagic expectoration as being especially dangerous.[110]

Rusty sputa occasionally continue for a long time. Walshe[111] says that it may persist for a fortnight. Fox[112] gives nine days as the limit. Stokes[113] saw a patient in whom it continued for several weeks after the physical signs had disappeared. Andral[114] noticed it continue for nineteen days—nine days after the disappearance of the physical signs.[115] I have seen it continue for a long period in several cases—in one for forty days.

The blood in the pneumonic expectoration is derived from the dilated capillaries ramifying upon the surface of the air cells and the smaller bronchi.

It is the changes by oxidation and disintegration, of the sanguineous elements that causes the peculiar and curious colorings sometimes met with in pneumonic sputæ.

Of these chromatic changes the green[116] has attracted the greatest curiosity. In the presence of an alkali the coloring matter of the blood splits up into albuminoid and hematin, with a green color resulting.[117] The majority of instances of green sputa are due to this cause, although true biliary expectoration certainly does sometimes occur, as evidenced by the presence of the coloring matter of the bile.[118] It is the presence of this greenish expectoration in some cases which has given "bilious pneumonia"[119] a place in the nosological scale with so many physicians. I am, however, inclined to think, with Juergensen[120] and others, that the term should be abolished from use.

In one of my cases, during convalescence, the expectoration assumed, upon standing for a prolonged period, a fine and peculiar grass-green color. It was only by accident that my attention was called to this point in the case, and the phenomena may have been present in others without my cognizance. The patient, a young man of intemperate habits, had a very severe attack of pneumonic fever, with consolidation of the greater part of the right lung. From the beginning the expectoration was very free and so sanguineous as to well merit the appellation "bloody." Crisis, with colliquative sweating and slight collapse, occurred on the seventh day, whilst the expectoration was still quite profuse, although it had assumed a dark gray color and was expelled in masses of considerable size and consistence. Two days later a specimen of the expectoration, which had been standing in the cup for thirty-six hours, was brought to me for inspection. The messenger was very much astonished when he removed the covering from the specimen, which was of a greenish gray color, for, he assured me, it was of a pure green color when he had started from home. I placed the glass at rest and after a few hours the contents presented a very remarkable appearance. A thick grayish precipitate had fallen to the bottom, whilst the supernatant fluid was grass-green in color and presented a most beautiful appearance by transmitted light. On the following day I observed a small quantity of the sputa in a basin, and on the surface of this there was a thin stratum of a similar greenish fluid.

At the time I attributed the green color to a coloring of the serous portion of the expectorate by the oxidized coloring matter of the escaped blood and therefore did not give it that careful examination which it deserved. I have been able to find notices of but two similar cases,[120] and in these the coloring matter was proven to be vegetable spores. When potash was added the green color became intensified, whilst acids, ether and alcohol produced no effect. A few drops of the colored fluid was added to milk and a greenish crust was developed after a few hours' standing. Under the microscope there were to be seen numerous active vibrios, greenish spores and minute glistening granules which were evidently stumps of the greenish spore. The same appearance was found in the crust developed upon the inoculated milk.[121]

Even blue expectoration has been noticed[122] in at least one case. Sometimes the expectoration is of such color, odor or consistence as to resemble pure, gangrenous matter, the juice of prunes, currant jelly, the lees of wine, the juice of licorice, mucilage, glue, etc. These dark sputæ are usually expectorated with greater ease and facility than the lighter colored. They have always been considered as being of great import.[123]

A very peculiar sputa, resembling a thick mucilage[124] or glue,[125] colored a brownish red and which escapes in a single sheet when the vessel is inclined, always indicates a dangerous case.

That the various shades of color which the pneumonic expectoration assumes is due to oxidation of the sanguineous elements, and not from any variation in its original composition, seems proven by the fact that no matter in whatever proportion the blood is mixed with a mucilaginous fluid the pneumonic shades can not be produced.[126]

Under the microscope the blood corpuscles are not closely approximated, but are separated from each other, or are in contact only at their edges.[127] The epithelial cells are often colored[128] the shade of the expectoration, but they may remain unaltered in size and shape, although this is unusual.[129] Black pigment is found not infrequently in some geographical localities.[130] There is also seen minute or larger masses of fibrine, derived from the finer ramifications of the bronchial tree, infundibula and air cells. They are firm coagula, enveloped in the mucus of the sputa, are of a whitish-yellow color, lightly tinged with red, and adhere closely to the sides of the vessel. They become more easily recognizable when washed, although washing decolorizes them. They are composed entirely of fibrine, and may be dichotomously branched, forming more or less perfect casts of the finer bronchi. During the height of the disease they may be expelled in masses of considerable size,[131] but during its decline they are smaller, more or less disintegrated and are not so easily recognized as being parts of casts of a branched tree. They are met with in the vast majority of cases,[132] but are most abundant in those having a powerful cough as considerable force is required to dislodge them. They were noticed by Tulpius,[133] Reynaud,[134] and others, but Remak[135] first pointed out their true nature.[136] Casts such as those described are found only in pneumonic fever,[137] although in another form they are seen in fibrinous bronchitis.[138]

Spiral and central fibers have also been observed in some cases. When these are accompanied by Leyden's crystals the sputum is said to be characteristic of asthma,[139] but they are observed in other diseases also.[140] The pneumococcus may be demonstrated in some instances by careful manipulation.[141]

Place the twenty-four hours' sputa in a conical glass and let it stand in a temperature of from 92 to 102 degrees for twenty-four hours. The thicker portion of the sputa will settle to the bottom and a portion of this is to be examined, as it is easier manipulated and more apt to contain the germs. The proper reagents are to be used for staining.[142]

Various other microscopical appearances may be observed[143] and will well repay careful study.

### PAIN.

Pain, like cough and expectoration, is almost always present in pneumonic fever.[144]

It was present in all of Gerhard's[145] cases; in 98 per cent. of Chomel's[146] cases; in 92 per cent. of Doubleday's[147] cases; in 90 per cent. of Grisolle's[148] cases and in 98 per cent. of my own cases, excluding young children who were unable to make known the fact.

It generally comes on very early in the attack[149] and rapidly attains its maximum intensity. In rare cases it may precede by a few hours, or even several days,[150] the appearance of other symptoms.[151] In other cases, also rare, pain may be more or less delayed in its appearance,[152] or remain absent.[153]

After attaining its maximum intensity it continues unabated for a few days to gradually decline in severity and cease on the third or fourth day, or at least some time before the end of the attack.[154] This subsidence of the pain is a part of the natural history of the disease and occurs independently of remedies for its relief.[155] In rare cases pain may continue for a long time[156]—even far into convalescence. *The pain may be extensively diffused over the chest* or, and this is usually the case, it may be confined to a single circumscribed spot which can be covered by the end of the patient's finger.

This last is an important point in the differentiating this pain from that due to bronchitis. In the latter the patient, in locating the pain, instinctively places his open hand over the painful area, while in pneumonic fever he will inspire deeply, so as to reassure himself as to where the painful spot is situate, and will locate *it with the point of the* extended finger.

The pain is usually located over the seat of the local inflammation, or on a somewhat lower level. Thus when the apex is affected the pain is referred to the level of the third or fourth rib, or still lower, *and if the base is the part inflamed it is often located* below the diaphragm. Children very frequently refer the pain to the scrobiculus cordis or abdomen.[157] Even adults not infrequently refer the pain to the pit of the stomach.[158] Although the pain is usually located on the affected side—the neighborhood of the nipple being a favorite spot—yet it may be referred to some point on the opposite side.[159] In case the local inflammation is double the pain is often confined to one side only,[160] as I have repeatedly observed. The pain not infrequently radiates from a central point on the chest towards the shoulders, loins, hips, etc., or it may be confined to these distant localities.[161]

In character the pain varies considerably in different cases and will be described with a variety of adjectives by various patients. Generally it will be denominated a stitch,[162] a lancinating,[163] or a burning[164] pain. In intensity it varies from a mere sense of uneasiness to the most agonizing suffering,[165] but it is almost always quite severe and distressing,[166] especially at the beginning of the attack.

Besides the pain there is noticeable, in most cases, an indescribable but most uncomfortable sensation of thoracic oppression, especially of the affected side, which has been compared to the pressure of a heavy weight, or the compression of a vice. This oppression is probably due to the sanguineous congestion of the lung and the deposition of exudative material in the pulmonary textures. Wittich[167] considers this peculiar oppression pathognomonic of pneumonic fever. This oppression, unlike the acute pain, often continues *throughout* the entire attack. In many cases, especially late in the course of the disease, there is present diffuse thoracic soreness.

The amount and intensity of the pain, oppression and soreness varies in different cases and epidemics[168] and bears no definite relation to the extent and character of the pulmonary lesions. A large proportion of the lungs may be affected with no pain,[169] while a trifling amount of local inflammation may give rise to the most excruciating suffering.

Painful hysterical symptoms may prove very *annoying*. Davis[170] reports the case of a young lady who had excruciating pains, vacillating from the left side of the chest to the *head for several days* before pneumonic fever, complicated by endocarditis, could be diagnosed. Twenty-four hours later convulsions, with *intense pain*, set in, followed by death in twelve hours.

Pain is increased or developed by deep breathing, coughing, talking, sneezing and pressure[171] in the intercostal space over the seat of inflammation, or an upward pressure below the ribs. I have very often elicited pain by such pressure when the patients declared themselves free from this symptom. Early in the attack it is a diagnostic aid of considerable value, but it should not be employed at a later period.

The pain may be associated with cutaneous hyperæsthesia.[172] In one of my cases this was so marked *that the lightest touch caused the most excruciating suffering.*

The actual seat and cause of the pneumonic pain has not as yet been clearly elucidated. The old and very popular opinion locates it in the inflamed pleura.[173] This theory is rendered weak from the fact that pain is often absent in simple pleurisy and may be present in pneumonic fever without pleural involvement.[174] That the pain is not due to the presence of the exudative material is clear from the fact that it ceases while the pressure remains.[175]

I am of the opinion, without being able to give any very satisfactory reason for it, that the pain has its origin in, and depends upon inflammation of, both the pulmonary and pleural textures, or either separately. I also believe that the pain due entirely to the pulmonary, is usually more diffused and less acute than that exclusively from the pleural lesions.

34 Washington St.

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[1] See Thucydides, Opera, Lib. 11, cap. xlix—ti;—Hippocrates;—Inter. Adfec., Lib. 11;—Coelius Aurelianus, Acut. Morb. Lib. 11, cap, xxv, et xxix. and every writer since their days.

[2] Vorlesunger u Pneumonie, Leipzig, 1841, S. 28.

[3a] Die Aderlasse in Lungenentzündung, Wein, 1853, S. 30.

[4] Traté de la Pneumonie, Paris, 1841.

[5] See Fox. Reynold's Syst. Med. Phila., 1880, Vol, 11, p. 217.

[6] See Clark, London Lancet, N. Y., 1881, Vol. i, p. 253;—Dietl. Pneumonie, Wein, 1848, S. 54;—Flint, Prac. Med. Phil., 1868, p. 177;—Fox, Op. cit, p. 165;—Gerhard, Dis. Chest, Phila., 1860, p. 196;—Grisolle, Op. cit., p. 219;—Huss, Lungenentzundung, Leipzig, 1861, S. 34;— Dis. Chest, N. Y., 1880, p. 220;—Mussy, Gaz. des Hop., Auvril, 9. 1846;—Sturges, Pneumonia, London, 1876, p. 34;—Trousseau, Clin. Med., Phila. 1872, Vol. i. p. 661;—Wilson, On Fevers, N. Y., 1881, p. 182; Fiemssen, Pleuritis u. Pneumonie. Berlin, 1862, S. 220. Et al.

[7] U. S. Marine Hospt. Rpts., 1886, p. 172 Another case, p. 273.

[7a] See also Satterthwaite, Phila. Med. News, Jan. 5, 1889, p. 4.

[8] See Copland, Med. Dic., N. Y., 1855, Vol. ii, p. 276;—Hewitt, Pathology, of Whooping Cough, London, 1855; Radcliffe, London Lancet. N. Y., 1856, Vol. ii. p. 279;—Smith, Med. Chir. Trans., Vol. xxxvii, 1854;—Tanner, Dis. Infancy, Phil. 1871, p. 290; Trausseau. Clin. Med., Phila., 1872, Vol. i, p. 131;—Vogel, N. Y. Med. Rec., May 14, 1887, p. 555. Et al.

[9] *Ohio Med. Recorder, Apr. 1881, p. 498.*

[10] See Holt, N. Y. Med. Rec., Feb. 14, 1885, p. 177.

[11] See *Boston Med and Surg. Jour., Jan. 23 and Feb. 20, 1879*;—Dutcher, Cincinnati Lancet and Observer, Jan. 1861, p. 10;—Fleury, Bull. de la Soc. *Anat., T. xlii*, p. 165;—*Huxham*, Epidem. Dis., London, 1748, p. 59;—Lépine, Pneumonie, Wein, 1883, S. 43;—Rosse, Cruise of the Corwin, Wash., 1883, p. 16;—Sturges, Pneumonia, Lond., 1876, p. 5; Thucydides, Opera;—et. al.

[12] Chome' 11, S. 128;—Huss, Lungenentzündung, Leipzi . Phys., Phila., 1845, p. 580.

[13] See He , 1857, S. 7.

[14] See Friedlebru, Arch. f. Phys. Heilk., 1847, S. 16.

[15] *Holt, N. Y. Med. Rec.*, Apr. 8, 1888, p. 385. and Feb. 14, 1885, p. 174.

[16] See Heiss, Op. cit., S. 8;—Raven, London. Practitioner, Vol. xxx, p. 34.

[17] Chomel, Op. cit., S. 128. I have seen this in adults.

[18] Rilliet et Barthez, Mal. des Enfants, Paris, 1838, T. iii.

[19] See Wells, Jour. Am. Med. Ass., Dec. 19, 1885, p. 676.

[20] See Juergensen, Feinssen's Handb. d. Spec. Path. u. Therap. Leipzig, 1877, Bd. v, S. 88.

[21] See Bryant, London Lancet, N. Y., 1862, Vol. ii, p. 53;—Cooke, Ibid., p. 54; Coulson, Ibid., p. 54;—Desnos, La France Méd., Oct. 20, 1885;—Gaz. des Hôp., Mar., 1830;—Hornidge, Holmes' Syst. Surg., Phila., 1881, Vol. i, p. 481;—Wyman, Jour. Am. Med. Ass., Nov. 7, 1887;—et al.

[21a] Med. Chir. Obsv., No. 614.

[21b] See Goodell, Am. Jour. Med. Sci., Jan., 1871, p. 63.

[22] See West, London Lancet, 1887, Vol. ii, p. 353;—et al.

[x22a] See Gerhard, Berliner k. Wochenschr., Mar. 12, 1888, S. 205;—Meinère, arch. Gén. de Méd., 1824, p. 353;—Roger, Arch. Gén. de Méd., 1862, T. ii, p. 129.

[23] Med. Chir. Trans., Vol. lxv, and Artificial Respiration, 1887.

[x23a] See also Huss, Op. cit.;—Dujol, *Etude Clin.* de la Pneumonie, etc., Paris, 1876;—Northup, N. Y. Med. Rec., Feb. 16, 1889, p. 192;—Samter, Inaug. Dissert., Breslau, 1881, S. 52;—Pause. *Op. cit.*

[24] The bursting pressure of the adult lung is from three to nine inches of mercury. Such a pressure is far beyond anything possible for the patient to attain, no matter how powerful the cough. See Hutchinson, Capacität d. Lungen, Braunschweig, 1849;—West, Op. cit.;—et al.

[25] Wells, Jour. Am. Med. Ass., Dec. 19, 1885, p. 676.

[26] See Webster, N. Y. Med. Jour., May 14, 1887, p. 544.

[27] See Bumstead, Annals of Surgery, Feb., 1886, p. 139.

[28] See Wells, Jour. Am. Med. Ass., Dec. 19, 1885, p. 675.

[29] See McKenzie, Am. Jour. Med. Sci., July, 1893;—Robinson, N. Y. Med. Jour., July 18, 1885, p. 64. Sneezing may take the place of the cough, as in the plague of Athens. See Thucydides, Op. cit.

[30] See Kohts. Virchow's Archiv., May 6, 1874, Bd. lxvi, S. 191; et al.

[31] Krisner, 1819. Quoted by Kohts, Op. cit.

[32] Hiccough may also occur.

[33] See Naunyn, Deutsch. Arch. f. k. Med., May, 1879.

[34] See Brunton, Pharmacology, Phila., 1885, p. 221.

[35] See Wills, Schmidt's Jahrb.. 1885;—et al.

[36] See Heiss, Inaug. Diss., Munchen, 1857, S. 8. It is uncertain whether irritation of the pulmonary parenchyma alone can produce cough. See Kohts, Op. cit.

[37] See Meyer, Correspondenzb. f. Schweiger Aerzte, 1876, Nr. 1.

[38] Ziemssen's Handb. d. Spec. Path. u. Therap., Bd. v, S. 88.

[39] See Aretæus, De Caus. et Sig. Acut. Morb., Lib. ii, cap. i;—Avicenna, Cannon:—Baglivi, Med. Prax., 1696;—Ballonius, Epidem. et Ephemer., 1574, Lib. ii; Biermer, Lehre von Auswurf, Würz., 1855; Celsus, De Med., Lib. iv, cap. vii;—Coelius Aurelianus, Acut. Morb., Lib. ii, cap. i; Dietl, Die Aderl S. 31;—Hippocrates, Opera.; —Monro. -Pearson, Phil. Trans., 1809; Lommius, —Seidelius, Sputo et Muco, 1590;—Van Swieten, Commertz. Aphor. Boerhaavi, 1742;—et al.

[40] See Andral, Med. Clin., Phila., 1843, Vol. ii. p. 194;—Baglivi, Op. cit.;—Biermer, Op. cit., S. 120;—Burt. Phys. Explor. Chest, N. Y., 1889, p. 27;—Chomel, Pneumonie, Leipzig, 1841, S. 128;—Clark, N. Y. Med. Gaz., 1880;—Coelius Aurelianus, Op. cit;—Cullen, Prac. Phys., Phila., 1792. Vol. i. p. 184;—Dietl, Pneumonie, Wien, 1848;—Fox, Reynolds' Syst. Med., Phila., 1880, Vol. ii, p. 166;—Frank, Cur. Hom. Morb., Viennæ, 1792; Juergensen, Ziemssen's Handb. d Spec. Path. u. Therap., Bd. v, 1877, S. 1, et seq.;—Morgagni, De Sed. et Caus. Morb., Lond., 1766;—Mussy, Gaz. des Hôp., Avr. 9, 1846;—Noyes, Am. Lancet, 1887;—Satterthwaite, Phila. Med. News, Jan. 5, 1809. p. 4;—Scott, London Lancet, N. Y., 1862, Vol. i, p. 350; —Stokes. London Lancet, N. Y., 1855. Vol. ii, p. 121;—Sturges, Nat. Hist. Pneumonia, London, 1876, p. 36;—Sydenham, Works, London, 1788, Vol. i, p. 330, et seq.;—Todd, Med. Times and Gaz., May 15, 1852, p 483;—Tweedie, London Lancet, N. Y., 1860, Vol. ii, p. 7;—Van Swieten, Op. cit;—Walshe, Diseases of the Lungs, Phila., 1860. p. 289;—Watson, Prac. Phys., Phila., 1845, p. 580;—Williams, London Lancet, N. Y., 1861. Vol. ii, p 224; —Wilson, On Fevers, N. Y., 1881, p. 182;—Briquet, Schmidt's Jahrb., Bd. xxvii, S. 334;—et al.

[41] Even in adults. See Homburger, Inaug. Dissert., Strassb., 1879, S. 101.

[42] Often due to inelasticity of the thoracic walls. See Wyss, Fortschritt d. Med., Jan. 20, 1888.

[43] Andral, Op. cit., p. 153.

[44] Sturges, Op. cit., p. 77.

[45] Including the alcoholic.

[46] Op. cit., S. 128, u. S. 131.

[47] Op. cit., S. 334.

[48] Op, cit., S. 31.

[49] Inaug. Dissert., Tul., 1858, S. 29.

[50] Lungenentzundung, Munchen, 1872.

[51] See also Andral, Op. cit.

[52] Fox, Op. cit., p. 166;—Walshe, Op cit., p. 288. Of 14 cases reported by Grisolle—Trintè de la Pneumonie, Paris, 1864—in which expectoration was absent, 7 were apical.

[53] Glasgow. Med. Jour., July, 1863, p. 137, and Lancet, N. Y., 1863, Vol. ii.

[54] *Opera Omnia*. Lib. ii, *cap*. v.

[55] Cannonis. Lib. v.

[56] Op. cit.

[57] Op. cit.

[58] N. Y. Med. Rec., March 6, 1886, p. 288.

[59] See also Alexander Trallianus, Opera Omnia, Perschmann's Ed., Wien, 1878.

[60] Andral, Op. cit., p. 194;—Frank, Op. cit.

[61] Op. cit., S. 132.

[62] See also Sturges, Op. cit., p. 36.

[63] See D'Espine, New York Med. Rec., Sept. 17, 1887, p. 375. See also Cameron, London Lancet, 1890, Vol. i, p. 425.

[64] See also Ray, Ohio Med. Recorder, Apr., 1881, p. 498.

[65] See also Huss, Lungenentzündung, Leipzig, 1861, S. 35.

[66] See also Biermer, Op. cit., S. 120;—Goodridge, Bristol Med.-Chir. Jour., March, 1887;—Hippocrates, Op. cit.;—Huss, Op. cit.;—et al.

[67] Andral, Op. cit., p. 129;—Chomel, Op. cit., S. 231;—Dietl, Op. cit., S. 58.

[68] Op. cit.

[69] Baglivi, Op. cit.;—Fox, Op. cit., p. 166.

[70] Fox, Op. cit.;—Morgagni, Op. cit.;—Sydenham. Op. cit.

[71] Frank, Op. cit., however, recommended bleeding for the restoration of suspended respiration.

[72] See also Avicenna, Op. cit., Lib. iii, Tract. 4, cap. i;—Lépine, Pneu monie, Wien, 1883, S. 43;—Robinson, Phila. Med. News, Jan. 5, 1889, p. 25; —Todd. Med. Times and Gaz., May 15. 1852, p. 483.

[73] For further information see Alexander Trallianus, De Arte Med., Lib. xii;—Biermer, Lehre vom Auswurf, Würzb., 1855;—Burt, Op. cit., p. 27;—Coelius Aurelianus, Acut Passion., Lib. ii, cap. xxvii;—Gunsburg, Arch. f. Phys. Heilk., 1845;—Heinrich, Häser's Archiv., Bd. vi, 1844;—Hippocrates, Op. cit.;—Johannes Actuarius, Med. Meth. Medendi;—Louis, Phthisis, Boston, 1836, p. 66;—Mesué, Prac. Med.;—Morgagni, De Sed. et Caus. Morb., Epist. xxi;—Paulus Aeginatus, De re Med., Lib. vii; —Remak, Diag. u. Path. Untersuch., Berlin, 1845:—Rhazes, Med. ad Almansor;—Van Swieten, Op. cit.;—Zehentmeyer, Zeitsch. d. Weiner Aerzte, 1845;—et. al.

[74] See also Biermer, Op. cit., S. 112;—Gerhard, Diseases of the Chest, Phila, 1860, p. 197.

[75] Biermer, Op. cit., S. 118, states that the quantity rises to eight or ten ounces in the twenty-four hours during the later stages of the malady, but this is opposed to my experience.

[76] See Riessel-Huppert, Arch. d. Heilk., 1869.

[77] Op. cit., S. 115. et seq.

[78] Zeitsch. f. Biolog., 1875.

[79] See Andral et Gavarret, Ann. de Chiem. et de Phys., T. lxxv;—Scherer, Chem. u. Microscop. Untersuch., Heidelb., 1843.

[80] Reuk, Op. cit.

[81] Renk, Op. cit.

[82] The walls of the bronchi do not secrete mucus in a state of health, the surfaces being moistened by an aqueous exhalation.

[83] Reuk, Op. cit.

[84] See Beale, Med.-Chir. Trans., Vol. xxxv, 1852.

[85] Würzb. Med. Zeitschr., Bd. ii, Nr. 5 u. 6.

[86] *See Fox, Op. cit., p. 167.*

[87] See Panoff, Inaug. Dissert., St. Petersburg, 1889, Nr. 2.

[88] See also Baker. Causation of Pneumonia, Lansing, 1888, p. 290;—Flint, Physiology, Vol. i. p. 132;—Wright, London Med. Times, 1881, p. 200.

[89] See also Fox, Op. cit., p. 167;—et al.

[90] Beale, Op. cit.;—Robin et Verdeil. Chem. Anat. Phys., T. 11, p. 460; —Verdeil, Gaz. Méd. de Paris, 1851, p. 777;—et al.

[91] Beale, Op. cit.;—Fox, Op. cit., p. 166;—Francis, London Med. Gaz., Feb., 1847;—Frick, Am. Jour. Med. Sci., 1852;—Heller, Goal's Diagnosis, 1845;—Juergensen, Op. cit., S. 107;—Simon, Hufeland's Jour., 1841;—Walshe, Op. cit., p. 289;—et al.

[92] See Bleuler, Inaug. Diss., Zürich, 1865, S. 37.

[93] Biermer, Op. cit., S. 112;—Prosper Alpinus, De Præsaglenda Vita et Morte, etc., Venet., 1601, Lib. vii.

[94] See Huxham. Epidem. Dis., London, 1745, Vol. ii, p. 59.

[95] *For further information on the chemistry of the* pneumonic expectoration, see Baglivi, Prax. Med., Lugd., 1696;—Biermer, Op. cit., S. 119;—Bibra, Untersuch., Berlin, 1842;—Caventon, Ann. d. Chem., 1843;—Gluge, Casper's Wochenschr., 1837, Nr. 39;—Donné, Arch. Gen. de Méd.. 1836;—Henle, Hufeland's Jour., 1838;—Hœfle, Chem. u. Mikroskop., Erlangen, 1848;—Jacubowitsch, Inaug. Diss., Dorpa Leipzig, 1845;—Munro, Edinb. Med. and Trans., 1809;—Scherer, Chem. u. Mikrosk —Simon, Méd. Chem., Berlin, 1842;—Filanus, Inaug. Diss, Amster., 1849; —Vogel. Inaug. Diss., Munchen, 1888;—Wright, London Med. Times, 1844 and 1845;—et al.

[96] Traitè de la Pneumonie. p. 217.

[97] Pneumonie, Leipzig, 1841.

[98] Grisolle, Op. cit.

[100] Ziemssen's Hand., Bd v, S. 108.

[101] Fox, Op. cit., p. 166;—Kaulen. Inaug. Diss., Bonn. 1873.

[102] See also Baginsky, Pneumonie u Pleuritis, Würzb., 1880;—Holt, N. Y. Med. Rec, March 28, 1885;—Kœttnitz. Inaug. Diss., Halle, 1882. S. 26;—Lépine, Pneumonie, Wien, 1883;—Pause, Pneumonie, S. 113;—Sturges, Pneumonia, 1876;—Tanner, Diseases of Infancy, Phila., 1871;—Ziemssen, Pleuritis u. Pneumonie, Berlin, 1862;—et al.

[103] See Sturges, Op. cit., p. 5;—Cleveland, Clinic, Sept. 1, 1878, p. 98.

[104] See Chomel, Op. cit., S. 217. Juergensen (Op. cit.) never saw pure blood as an expectoration in this malady.

[105] Cronigneau, Jour. de Méd. de Paris, June 13, 1889;—Fenn. Therap. Gaz., June, 1885, p. 371;—Peacock, St. Thomas' Hospt. Rpts., Vol v. 1875; —Stortz, Inaug. Dissert., Würzb., 1884, S. 64.

[106] Thesè de Paris, 1835, p. 20.

[107] Foamy blood usually comes from large bronchi. See Heiss, Inaug Diss., Munchen, 1857, S. 7.

[108] Fox, Op. cit., p. 165;—Lépine, Op. cit., S. 43;—Walshe, Op. cit., p. 289.

[109] See Huss, Lungenentzundung, Leipzig, 1861.

[110] See Aratæus. Op. cit.;—Galli, De Peste et Peripneum, cum Sputo Sanguineo, Bix, 1655;—Guy de Chauliac, Tract. ii, p. 113;—et al.

[111] Op cit., p. 289.

[112] Op. cit., p. 166.

[113] Dis. Chest, p. 361.

[114] Op. cit.

[115] See also Fox, Op. cit., p. 166.

[116] Feldhausen 1879, S. 23.

[117] Lépine, Op. Op. cit., S. 44.

[118] See Abloing, T. lxiii;—Archier, Ibid., T. lxi; —Bailly, Fievres Int, p. 253;—Bianchi, Hist. Hepat., Vol. i. p. 236;—Bonnet, Fievres Intermit., p. 76 et p. 118;—Boling, Am. Jour. Med. Sci., Vol. viii, p. 87;—Blake, N. O. Med. Jour., Vol. vii, p. 510;—Brera, Jour. de Sedillot, T. xxxiii;—Cleghorn, Diseases of Minorica, London, 1761;—Chisolm, Dis. Tropics, p. 106;—Campardon, Bull. de l'Acad. de Méd., T. viii, p. 634;—Constant. Bull. de Thérap., T. xliii, p. 481;—Cooke, Med. Recorder, Vol. vii, p. 459;—Chauffard, Traitè des Fiev., p. 254;—Daniell, Eph. de Montpellier, T. iv., p. 399;—Davis, Fevers of Walcheren, p. 10 et p. 42;—Detournal, Arch. Gen. de Méd., 1829, p. 255;—Du Prés, Charleston Med. Jour., Vol. v, p. 607;—Day, N. O. Med. Jour., Vol. ii, p. 578;—Drake, on Fevers, Phila., 1854; De Renzi, M asmi Paludasi, p. 121;—Eberle, Prac. Med., Phila., 1831, Vol. i, p. 284;—Foster, Stethoscope, Vol. iii, p. 91;—Frank, Med. Prax., Lib. ii, p. 350;—Foley, Rech. en Algerie;—Forsyth, Med. Reporter, Vol. xii, p. 353;—Gouraud, Fievres Intermit., p. 103;—Gauzée, Arch. Gen. de Méd., T. iv, p. Dis. Chest, N. Y., 1830;—La Roche, Pne lot, Fies. Intermit., p. 17, p. 41 et p. 127;— Vol. iii, p. 152;—Matthei. Jour. de la So ton, An Clin. de Montpellier, T. xxvii, p. 54;—Morton, Opera Omnia;—Nepple p. 266;—Oliver, N. O. Med. Jour., Vol. 7. de Méd., T. viii, p. 443;—Potter, Med. Recorder, Vol. iv, p. 404;—Rochoux, Bull. de l'Acad. de Med, T. i, p. 926;—Raymond, Mem. de la Soc. Roy. de Méd., T. iv, p. 510;—Roche et Bérquin, Nouv. Elem., T. i, p. 440;—Strack. Fievres Intermit., Obsv. 32 et 38;—Stoll, Rat. Med., Lib. ii, p. 50;—Sauvages, Nosol. Meth., Lib. ii;—Williams, Med. Reg., Vol. iii, p. 454;—Andral. Op. cit., p. 164;—Lauter, Hist. Med. Bien;—et al.

[119] Op. cit., S. 140.

[120] See Cornil, Comp. Rend. soc. Biol., 1868, T. v, p. 39;—Rosenbach, Berliner k. Wochenschrift, 1875, S. 645.

[121] For further information on green sputa consult Biermer, Op. cit., S. 120;—Gerhard, Charité Ann., Bd. xiii, 1888;—Lépine, Op. cit., S. 44; Prosper Alpinus, Op. cit., Venet, 1601;—et. al.

[122] See Reifselius, quoted by Gurisch, De Saliva Hum., 1729.

[123] Andral, Op. cit., p. 133;—Barnes, Obstet. Trans., Vol. iv, p. 55;—Bennett. Med. Times and Gaz., Oct. 23, 1853;—Briquet, Schmidt's Jahrb., Bd. xxvii, S. 334;—Celsus, De Medicina, Lib. ii, cap. 8;—Chomel, Op. cit., S. 73;—Dietl, Pneumonie, Wien, 1848, S. 62;—Fox, Op. cit., p. 165;—Galen, Opera Omnia;—Hippocrates, Op. cit.;—Huxham, Op. cit., p. 59;—Prosper Alpinus, Op. cit; Walshe, Op. cit., p. 289;—Watson, Prac. Physic., Phila., 1845, p. 583.

[124] See Andral, Op. cit., p. 136.

[125] Biermer, Op. cit., S. 111.

[126] See Traube, Gesammelts Beiträge.

[127] Biermer, Op. cit, S. 39.

[128] Biermer, Op. cit., S. 36.

[129] For further information see Bühlmann, Schleund Resp. Organe, 1843;—Donné, Rech. sur la Mucus, 1837;—Gruby. Obsv. Path., 1840;—Günsburg, Arch. f. phys. Heilk., 1845;—Henle, Hufeland's Jour., 1833, u. Müller's Arch., 1838;—Hœfle, Chem. u. Mikroskop., 1848;—Lœnhardi, Morph. et Chem. Sputor Natura, 1845;—Rheimer, Würz. Phys. Med. Verh., 1852;—Vogel, Inaug. Diss., 1838;—et al.

[130] Makellar, Edinb. Med. Jour., 1845;—Melsene, Comp. Rend., T. xix, 1844;—Morgagni, De Sed. et Caus. Morb., 1766;—Morton, Phthisiology, London, 1689;—Pikford, Arch. f. phys. Heilk., 1847;—et al.

[131] See Crisp, London Lancet, N. Y., 1860, Vol. ii;—Lered, Ibid., 1857, Vol. ii, p. 145;—Thierfelder, Arch. f. phys. Heilk., 1854;—et al.

[132] See Bezeth, Nederl. Weekbl., 1852;—Biermer, Op. cit., S. 52;—Guttmann, Phys. Diag., N. Y., 1880, p. 138;—Meerbeck, Ann. de la Soc. d'Anvers, 1846;—Puchelt, Heidelb. Med. Ann., 1848;—et al.

[133] Obsv. Med., Lib. iv, 1641.

[134] Arch. Gen. de Méd., 1835, p. 157.

[135] Diag. u. Path. Untersuchungen, Berlin, 1845.

[136] See also Albers, Rhein Westphal, Correspondenzb., 1845.

[137] See also Biermer, Op. cit., S. 113;—Cadiot, Thèse de Paris;—Gri-

solle, Traité de la Pneumonie, Paris, 1864;—Gubler, Soc. de Biologie, T. ii, 1855;—Lépine, Op. cit., S. 46;—Renon, Thèse de Paris, 1872;—Reynolds, London Lancet, 1889, Vol. ii, p. 997;—Wiedmann, Thèse de Strassb., 1854; Wilks, *London Lancet, N. Y., 1855, Vol. ii, p. 48*;—Wyts, London Med. Gaz., 1847;—et al.

[138] See also Babcock, Jour. Am. Med. Ass., 1887;—Davis, Ibid., 1887;—Englemann, St. Louis Cour. Rec., 1887;—Madigan, Med. Standard, 1887;—Renon, Thèse de Paris, 1872;—Prager Med. Wochenschr., 1887;—Whittaker, Ann. Med. Sci., Phila., 1888;—Charboux, La Normandie Méd., 1887;—et al.

[139] Churchmann, Centralb., f. k. Med., 20 Mar., 1885;—Pell, Therap. Gaz., 1885, p. 603;—Vierordt u. Jacksch, Zeitsch. f. k. Med., Bd. ix, Nr. 1;—et al.

[140] See N. Y. Med. Rec., Oct. 24, 1885, p. 458.

[141] See D'Espine, N. Y. Med. Rec., Sept. 15, 1887, p. 375.

[142] See Philip, Edinb. Med. Rev., Nov., 1886;—et al.

[143] See Amburger, quoted by Whittaker, Cincinnati Clinic, June 16, 1877, p. 278;—Buhlmann, Inaug. Diss., Bern, 1843;—Heinrich, Hasser's Arch., Bd. vi, 1844, u. Henle's u. Pfeuffer's Zeitschr., Bd. iv, 1845;—Rosenberg, De Microscop. usu in Diag., Gœtt., 1847;—Vogel, Mikroskop., 1841;—Whittaker, Op. cit.;—Zehetmeyer, Zeitschr. d. Wiener Aerzte, 1845;—et al.

[144] See Alexander Trallianus, Opera, Lib. v, cap. i;—Cleghorn, Diseases of Minorica, London, 1762, p. 261;—Cœlius Aurelianus, Acut. Morb., Lib. ii, cap. xxv;—Hippocrates, Opera Omnia;—et al.

[145] Am. Jour. Med. Sci., Vol. xiv, p. 328.

[146] *Pneumonie*, Leipzig, 1841, S. 123.

[147] N. Y. Med. Rec., March 28, 1845, p. 343

[148] Traité de la Pneumonie, Paris, 1864.

[149] Andral, Med. Clin., Phila., 1843, Vol. ii, p. 116;—Doubleday, Op. cit.;—Larague, Gaz. des hôp., June 24, 1876;—et al.

[150] See Andral, Op. cit., p. 186.

[151] See Fox, Reynolds' Syst. Med., Phila., 1880, Vol. ii, p. 163;—Heiss,

—Hermann, Lungenentzundung, Würzb.,

Wochenschr., Sept. 18, 1871;—et al.

et al.

id Gaz., Oct. 23, 1853;—Boston Med. and Surg. Jour., Jan. 23, 1879, p. 131;—Fleury, Bull. de la Soc. Anat., T. xiii, p. 165;—Mussy, Gaz. des hôp., Avr. 9, 1846;—Raven, London Practitioner, Vol. xxx, p. 34;—Stokes, London Lancet, N. Y., 1855, Vol. ii, p. 121;—Tweedie, Ibid., 1860, Vol. ii, p. 7;—Wilson, on Fevers, N. Y., 1881, p. 182;—*et al.*

[154] *Heiss, Op. cit., S. 8;—Huss, Lungenentzundung*, Leipzig, 1861, S. 38;—Larague, Gaz. des hôp., June 24, 1876;—Lebert, Op. cit.;—et al.

[155] This was also noticed by the ancients. See Aretæus, De Caus. et Sig. Acut. Morb., Lib. ii, cap. i;—Celsus, De Medecina, Lib. iv, cap. vii; et al.

[156] *Fox*, Op. cit., p. 163.

[157] See Henoch, Jour. f. Kinderk., 1849, Bd. xiii, S. 8;—Monti, N. Y. Med. Jour., Dec. 1, 1883, p. 602;—et al. It may be offered in objection that children refer *all* pains to the abdomen.

[158] In one of my cases pressure over the stomach invariably caused cough.

[159] See also Chomel, Op. cit., S. 124;—Gerhard, Dis. Chest, Phila., 1860, p. 90;—Huss, Op. cit., und Deutsche Arch. f. k. Med., Bd. ix, S. 242;—Juergensen, Ziemssen's Handb., Bd. v, S. 90;—Laennec, Dis. Chest, N. Y., 1830;—Swett, Dis. Chest, N. Y., 1856, p. 99;—Wittich, Pneumonie, Erlangen, 1850, S. 15.

[160] See Chomel, Op. cit., S. 124.

[161] See also Chomel, Op. cit., S. 124;—Heiss, Inaug. Diss., München, 1857, S. 7;—et al.

[162] See Cleghorn, Diseases of Minorica, London, 1762, p. 261.

[163] See Alexander (of Tralles), Opera, Lib. v, cap. i, et Lib. vi, cap. i; Cœlius Aurelianus, Acut. Morb., Lib. ii, cap. xxv;—Huxham, Epidem. Diseases, London, 1748, Vol. ii, p. 59;—et al.

[164] Aretæus, De Caus et Sig. *Acut. Morb.*

[165] See Heiss, Op. cit., S. 8.

[166] See U. S. Marine Hospt. Rpts., 1887, p. 239.

[167] Op. cit., S. 15.

[168] See Dutcher, Cin. Lancet and Observer, Jan., 1861, p. 10.

[169] See also Dietl, Lungenentzundung, Wien, 1848, S. 59;—*et al.*

[170] Jour. Am. Med. Ass., Oct. 13, 1883, p. 415.

[171] See Keating, Phila. Med. *News, April 1, 1882, p. 341;—et al.*

[172] See also Fox, Op. cit., p. 163. There may be also muscular soreness due to rupture of some of the fibers of the muscles of the chest or abdomen. See Juergensen, Op. cit.;—Kœttnitz, Inaug. Dissert., Halle, 1882, S. 30.

[173] Aretaeus, Op. cit.;—Andral, Op. cit., p. 185;—Gerhard, Op. cit., p. 197;—Green, Quain's Dic. Med., N. Y., 1883, p. 876;—Juergensen, Op. cit.,

hila., 1885, Vol. iii, p. 200;—Satter-

p. 5;—Swett, Op. cit., p. 100;—Wat-

ox, Op. cit., p. 163;—et al.

ec, Op. cit., p. 220;—Williams, Lon-

See also Heiss, Op. cit., S. 6.

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## PHILADELPHIA NEWS.

The fact that Pennsylvania has now a law creating a State Examining and Licensing Board has already been noticed in the Journal, but a slight correction should be made in the text of the Act (page 62 *ante*). The legislature did not appropriate the sum of two *hundred* thousand dollars for the purposes of the board, but simply "two thousand dollars" for the first two years' expenses. The last legislature, however, was very liberal in other ways and proved its high appreciation of Philadelphia medical interests by grants of *$115,000 to the* hospital of the University of Pennsylvania, (the $15,000 being for a *maternity department), $110,000* to the hospital of the Jefferson Medical College, $100,000 to the hospital of the Medico-Chirurgical College and $70,000 to the Polyclinic Hospital, besides other grants, all of which will tend directly or indirectly to increase the clinical and teaching facilities of our medical schools.

The Pennsylvania Hospital is building a handsome three story wing on the north side, which will be devoted entirely to surgical cases and will nearly double the capacity of this venerable institution.

Under the auspices of the American Society for the Extension of University Teaching, vacation studies in history, literature and science directed by university specialists have been successfully instituted; the first summer meeting being held in Philadelphia from July 5 to August 2. Of general interest to physicians is the special course of instruction in sanitation and hygiene by Dr. John S. Billings, U. S. A., and A. C. Abbott, consisting of twelve lectures and demonstrations. The University of Pennsylvania has generously placed at the disposal of the summer meeting its college buildings, libraries and laboratories so far as these may be needed for the instruction to be given, so that the first annual meeting is held under very favorable auspices.

The College of Physicians has called the attention of the authorities to the injury to the public health likely to result from the wholesale tearing up of the streets incident upon the substitution of the electric trolly system for horse power on nearly all the city railways, now being done by the Philadelphia Traction Company. In addition to this, the Edison Light Corporation is laying mains, and will dig up over a hundred miles of streets during the present season. In the meantime the drainage is obstructed, and street cleaning in many places is out of the question. This is one way of getting ready for an epidemic of cholera, yellow fever, or almost anything. In fact, the death rate of last week was considerably higher than that of a year ago, the increase being mainly in the number of infectious diseases.

On July 10, the brig "Odorilla," Capt. Holland, returned to this port after sixteen months' voyage to Santos, Brazil, where the entire crew and officers (eight men in all) died of yellow fever, the captain alone surviving, as published at the time in The Journal. The vessel is detained and will be thoroughly disinfected at the new stations at the Breakwater and Reedy Island, which have been recently established by the United States government. The former is situated on the Breakwater at Delaware Bay near Cape Henlopen, and the latter in the river near the entrance to the harbor. Farther up the river is the quarantine station at Little Tinecum Island, now entirely under the jurisdiction of the State authorities, which are fully in harmony with the National quarantine service. Since the first of this month, the city of Philadelphia, through its board of health, also coöperates with the State officials, but no longer has any direction or control of the quarantine station. As an additional safeguard against the importation of cholera or yellow fever, it may be stated that the U. S. Marine Hospital service has authorized the organization of a corps of examiners to inspect the immigrant trains from the seacoast, these acting under the immediate direction of Dr. George Purviance, M. H. S. This plan contemplates placing a medical inspector upon each immigrant train, to remain with it to the place of destination, whenever the immigrants have been exposed to cholera, even though the period of incubation be passed. The railroads will be requested to furnish hospital cars, so as to permit prompt isolation of cases, the cars to be furnished with earth closets and means of thorough disinfection.

Poisoning by carbolic acid is not very rare, but two cases recently came to the coroner's notice which might be mentioned: The first was a woman 21 years of age, who quarreled with her husband and drank a quantity of the acid with suicidal intent. Contrary to the usual effects, she suffered great agony, and calling for assistance was taken to the Jefferson College Hospital, where she died shortly afterwards. The second case was a child four years of age, which found in a closet a bottle of carbolic acid and drank a small quantity and promptly died. The parents stated that there had been a case of typhoid fever in the house and an official of the Board of Health had left the bottle of carbolic acid for disinfecting purposes. This appears to show carelessness on the part of the health board and neglect or ignorance on the part of the parents. It recalls the case of another child five years of age, who drank some carbolic acid from a saucer which had been placed under a sofa, in order to drive away moths or other insects, with the same result. Another child, three years old, ate some yellow substance which he found on a lot and mistook for mustard, of which he was said to be very fond (!); the child was almost immediately seized with convulsions and died within a few hours. The powder was believed to be chrome yellow.

The coroner recently investigated a case of a girl of 11 years, who died of diphtheria. She had been given a number of powders during her illness, purchased of a woman who said that "she had cured thousands" through the use of the powders which were prepared from a secret formula by herself. The father of the child asked for an investigation, as it was thought possible that her death might have been hastened by the medicine. The jury decided that the fatal result was "due to exhaustion from the disease," but added that death was "superinduced by the drug," and censured the woman "for selling the article when she would not make known its ingredients." The amateur doctress escaped very easily, but it is quite surprising how lenient the law is in dealing with proprietary medicinal interests. Perhaps the new medical council will correct this after January first of next year.

Among recent changes of appointments we observe at the University that Dr. Chas. B. Penrose has been appointed the successor of Prof. Goodell as Clinical Professor of Gynecology. At the Medico-Chirurgical College, Dr. L. Webster Ford was made Professor of Ophthalmology and J. Madison Taylor, Professor of the Diseases of Children. Dr. Wm. F. Waugh's name appears in the new announcement as Honorary Professor.

The annual competitive examinations for the post of resident physician at the Philadelphia Hospital, attracts considerable attention on account of the rivalry of the schools and because it is taken as a public test of ability and attainments of the students. At the recent examination there were 119 candidates. Of these seventy were from the University of Pennsylvania Medical Department, nineteen from Jefferson, twelve from the Medico-Chirurgical, twelve from the Woman's College, and the rest were from schools outside of Philadelphia. Nearly all of these attained the required average of seventy, but the rule is that the first sixteen are at once elected, and the rest are called to serve in the order of their standing, as vacancies occur. During last term not less than twenty-four residents were thus appointed. The honors of the examination were pretty even; Jefferson got number one, the University got the largest number of appointments, and the Medico-Chirurgical claims the highest scholarship average of those sent up; the ratio of appointments to applicants is as follows: University, seventy applicants, ten successful, ratio one in seven; Jefferson, nineteen applicants, two successful, ratio one in nine and one-half; Medico-Chirurgical, twelve applicants, two successful, ratio one in six; Woman's Medical, twelve applicants, two successful, ratio one in six. It rarely happens that the results of a competitive examination meet with such approval; cause such general satisfaction.

## BOOK NOTICES.

We have received a copy of the second edition of Dr. W. W. Keen's operation blank, published by W. B. Saunders, Philadelphia. These blanks are extremely useful to all operating surgeons.

**A Medical Handbook for the Use of Practitioners and Students.** By R. S. Aitchison, M.B., C.M., F.R.C.P.E. Illustrated 16mo. Flexible covers, morocco. London: Chas. Griffin and Co.; Philadelphia: J. B. Lippincott and Co. 1893.

This book, as is stated in the preface, is intended to be a companion to Caird and Cathcart's Surgical Handbook. Particular attention has been given to the practical diagnosis and to the clinical classification of disease. In treatment of disease the author has recommended the use of only such remedies as are known to be beneficial. Medical handbooks are not to be encouraged in the place of the more thorough works on the subject, and should not be used by students except as a means of rapid reference, yet this book is one of the most complete of its kind that has come to our notice; and that much talked of individual, the busy practitioner, will often turn to its pages for a ready peg on which to hang his diagnosis and theory in a case where his library is not immediately accessible.

**Stricture of the Urethra.** By G. Frank Lydston, M.D. Cloth, pp. 334, price $3. Chicago: The W. T. Keener Co. 1893.

Naturally the book opens with a chapter on the anatomy of the part involved, next on instrumentation, a very important chapter; then follow definition, location, morbid anatomy, causes, symptoms, diagnosis, prognosis and treatment. Chapters eight to thirteen are devoted to treatment, which necessarily includes a discussion of different methods. The author prefers Otis' dilating urethrotome to other instruments of the kind, and in regard to electrolysis he takes a very moderate ground. While relating a case, and stating that there are some cases favorably influenced by this method, he regards the extravagant claims as disproved, and in fact the whole matter as *sub judice*. The illustrations are excellent, and barring the italics, and a constant desire to grind some imaginary antagonist into powder, the author has produced an excellent book, one which gives the latest views on the subject and well represents the approved methods of treatment. We hope it may have an excellent sale.

**Hypnotism, Mesmerism and the New Witchcraft.** By Ernest Hart. 8vo. cloth, pp. 182. New York: D. Appleton and Co.; Chicago: A. C. McClurg and Co.

In this little book Mr. Hart has brought together in his entertaining style his own papers on the subject which have appeared in the *Nineteenth Century* and the *British Medical Journal*. He dissipates many popular errors, and unmasks the impostors who played their part well at La Charité. His controversy with M. Luys at Hôpital Charité is skillfully managed, and the book is well worth reading. The simple methods by which the impostures of Jeannie and Mervil were exposed will be valuable when making similar investigations elsewhere.

**The Health Resorts of Europe.** A Medical Guide to the Mineral Springs, Climatic Mountain and Seaside Health Resorts, Milk, Whey, Grape, Earth, Mud, Sand and Air Cures of Europe. By Thomas Linn, M.D. 8vo. cloth, pp. 330. New York: D. Appleton and Co.; Chicago: A. C. McClurg and Co.

This book, as its rather lengthy title page shows, is a guide book to the various health resorts of Europe, but it goes farther; it specifies particularly the therapeutic indications which should govern the choice of particular localities. These are necessarily based on the especial claims of the different resorts themselves, and are usually too emphatic to be true. The book is not equal in interest to the book of Dr. Thomas Madden Moore on "Change of Climate," but as a directory is extremely valuable.

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**Immigrant Record for June.**—During the month of June there arrived at the ports of the United States from the principal foreign countries, except the British North American possessions and Mexico, 67,726 immigrants, and in June, 1892, 73,120. During the twelve months ending June 30, 1893, the number of immigrants were 497,936, and during the corresponding period of the preceding year, 619,320. Of the number arrived during the twelve months ending June 30 last, 96,313 came from Germany, a decrease of 34,309; from Italy, 72,403, an increase of 11,459; from Sweden and Norway, 53,872, a decrease of 3,281; from Russia (except Poland), 43,657, a decrease of 40,631, and from the United Kingdom, 108,716, a decrease of 8,352.

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SATURDAY, JULY 29, 1893.

## THE CLINICAL APPLICATIONS OF PANCREATIC EXTRACT.

The most recent work on the subject of therapeutics, PROF. HAYEM's Lecons de Therapeutique (Paris, 1893, Tome iv), refers to pancreatin as "a variable product still more poorly defined than pepsin," and directs attention to the fact that the diverse preparations found in the stores are often inert. In closing his consideration of the subject the author emphasizes his previous remark by stating that "all the practical difficulty consists in procuring a good preparation." Fortunately for the profession in this country, the manufacture of pancreatic extract (or so-called pancreatin), is in the hands of well known manufacturing pharmacists, whose reputation is a sufficient guarantee for the excellent quality of their goods. So that it is entirely within the power of prescribing physicians to obtain therapeutically active pancreatic preparations, if they desire to do so, just as it is in the parallel case of pepsin.

Before considering the clinical uses of pancreatic preparations, it may be well to very briefly review the physiological data which serve as a guide to their rational application. In its physical structure the pancreas is very similar to the parotid gland, and is sometimes referred to as the salivary gland of the abdomen. The analogy, however, does not extend to its secretion, which is considerably more complex than the saliva. Human pancreatic juice is limpid, according to HERTER, and contains 976 parts of water per thousand. The organic substances are contained in an alkaline medium, the alkalinity being due to phosphates and carbonates, especially of soda. The extract of pancreas, or pancreatin (precipitated from watery solution by alcohol, or extracted by ether), forms with water and an alkali, an active, digestive fluid, having the same properties as the pancreatic juice. HALLIBURTON states[1] that "the organic substances present in the pancreatic ferment are: *a.* Ferments: These are the most important, both quantitatively and functionally, of all the constituents; they are four in number: 1. Trypsin—a proteolytic ferment. 2. Amylopsin or pancreatic diastase—an amylolytic ferment. 3. Steapsin—a fat-splitting ferment. 4. A milk-curdling ferment. *b.* A small amount of proteid which is coagulable by heat. *c.* A mucin or mucin-like substance. *d.* Traces of leucin, tyrosin, xanthin and of soaps, have been described."

The fact that pancreatic secretion dissolved coagulated white of egg was observed by BERNARD and later by CORVISART, but KUHNE first isolated the special ferment, to which he gave the name of trypsin. This is "a proteid, or a substance closely allied, or adherent, to a proteid" (HALLIBURTON). Amylopsin, which resembles the ptyalin of the saliva in its property of converting starch into maltose, was first described by VALENTINE. It is said to be absent from the *pancreatic secretion of new-born* children, which explains the intolerance for starchy *foods often found at this period.* Amylopsin acts better in the presence of bile than by itself. The steapsin or fat-splitting ferment has never been separated, its presence being simply inferred from the action of the pancreatic juice on fats, and the *same is true* of the fourth, or milk-curdling ferment, from its action upon fresh milk.

The analogy of trypsin to pepsin has already been noted; but certain differences are to be observed. For instance, trypsin acts in an alkaline, pepsin in an acid solution. Trypsin acts more rapidly than pepsin, but the same series of proteoses can be detected as intermediate products in the formation of peptone. An albuminate in the nature of alkali albumin is formed in tryptic digestion; on the contrary, one of the nature of acid albumin is formed in peptic digestion. Trypsin acts more powerfully than pepsin on certain of the albuminoids difficult of digestion, such as elastin, and waxy or albuminoid substance. It digests nuclein, which is not attacked at all by gastric juice. Keratin and chitin are, however, indigestible by both ferments. Trypsin acts further than pepsin, decomposing the hemi-peptone into simpler products, of which the most important are leucin and tyrosin, asparaginic acid, ammonia and proteinchromogen. (HALLIBURTON, loc. cit.)

In regard to the conditions in which the therapeutic employment of pancreatic extract would prove advantageous, it would seem natural to place in the front rank those cases of digestive or nutritive disturbance arising from impairment or temporary suspension of the function of the pancreas. When this condition is present, the fatty matters fail to be emulsified or saponified, and appear unaltered in the feces. *Claude Bernard* found that the bile alone only gave a light brown color to the feces, whereas when the pancreatic juice was also present the color was a distinct brown. Therefore, light colored discharges from the bowels are an indication of a failure in the pancreatic secretion. Since intestinal digestion of both proteids and carbohydrates depends upon the pancreatic juice, at least in great measure, we may regard intestinal dyspepsia also as one of the symptoms of pancreatic disorder. General emaciation may occur and this becomes most marked in malignant disease of the pancreas, which is usually accompanied by severe dyspeptic symptoms, with persistent nausea and vomiting and obstinate constipation. In acute affections of this organ, these symptoms may appear suddenly and be accompanied by great prostration or collapse. The so-called "cœliac affection" of children, characterized by the passage of large, loose, white or grayish, frothy and intensely fetid motions, is, in the opinion of DAWSON WILLIAMS, "most probably due to a temporary suspension of the functions of the pancreas." It has also been observed that this organ is atrophied in cases of diabetes, but whether as cause or concomitant of the disease has not been finally settled; although LANCEREAUX endeavored to constitute a special variety of diabetes, in which "there is degenerative disease of the pancreas, accompanied by, perhaps in all cases, diseases of the cœliac plexus. This is said to be characterized by a rapid course, diarrhœa and greasy stools containing scraps of undigested, nitrogenous food."

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[1] Text Book of Chemical Physiology and Pathology. By W. D. Halliburton, M.D., London, 1891.

In our clinical application of the above facts we find a physiological phenomenon unexpectedly limiting the usefulness of pancreatic preparations. It is that the activity of the ferments of the pancreatic secretion are destroyed by contact with the acid gastric juice, as in fact they are by any other acid medium. UNNA endeavored to overcome this by coating pancreatic pills with keratin; but unfortunately it was found that they not only escaped digestion in the stomach, but traversed the entire digestive tract with equal immunity. BOAS has suggested that pancreatic extract is particularly indicated in cases of suppression of the gastric secretion. This corresponds with the condition termed *apepsia*, where, as HAYEM points out, "apeptic patients empty their stomachs rapidly and the intestine has to bear the entire burden of digestion. If the pancreatic secretion and bile be normal and adequate, if the intestine functions well performed, there is no need to interfere; but should symptoms of intestinal indigestion supervene, pancreatic preparations may be prescribed with confident assurance of improvement." In some forms of entero-colitis it has also been used with advantage and particularly the entro-colitis of hot countries. In the latter case, it is very possible that the alkali which always should accompany the dose of pancreatic extract, may render the contents of the intestine less irritating, while assisting the action of the pancreatine in digesting and removing food material which is keeping up the disturbance. In ordinary constipation or diarrhœa with light colored motions, the pancreatic extract may be given. If the dose be administered when the stomach is free from food and especially if a preliminary dose of bicarbonate of sodium be administered, it is quite probable that the ferments will reach the intestine without their activity being at all impaired. In regard to the cases of diabetes mellitus to which LANCEREAUX directs attention, extractum pancreatis merits a trial, more especially since good results have been reported from the administration of other ferments such as yeast and of diastase. In general, whenever there is reason to suspect fatty degeneration, cystic change, atrophy or occlusion of the duct of the pancreas, it appears rational to administer pancreatic preparations to supply the deficiency of the normal secretion.

Trypsin, which may be regarded as a purified pancreatic extract has been applied as a digestive agent to diphtheritic exudations and has been injected into the bladder for the purpose of dissolving blood clots. A good solution may be made of the strength of half a drachm each of trypsin and of bicarbonate of sodium with a drachm of glycerin to the ounce, of water of the temperature of the blood. In employing this solution in diphtheria, a small proportion of bichloride of mercury (gr. ¼ to the oz.) may be added as recommended by DR. SAMUEL JOHNSON; the application to be followed by free spraying of the affected part with peroxide of hydrogen, properly diluted. In some morbid growths the parenchymatous injection of trypsin, alone or in combination with other remedies, might prove advantageous.

DR. WILLIAM A. HAMMOND in a recent lecture upon the novel preparations known as "animal extracts," proposes to appropriate the term pancreatine to the product of the pancreas, prepared in a peculiar manner. If these remedies come into general use, the term "Pancreatine" can be reserved for DR. HAMMOND's product, and the proper term of extractum pancreatis given to the mixed ferments of established therapeutic value, now before the profession.

## ARMY MEDICAL EXAMINATIONS.

During the past week the Surgeon General issued a Circular of Information for candidates seeking appointment in the medical corps of the army. This gives an account first, of the advantages as to rank, pay, emoluments and privileges which the military service offers to eligible young men. The method of making application for permission to appear before the board for examination is then described: "The candidate must be a citizen of the United States, between twenty-two and twenty-eight years old, of sound health and good character, and a graduate of some regular medical college, in evidence of which his diploma will be submitted to the board. The scope of the examination will include the morals, habits, physical and mental qualifications of the candidate, and his general aptitude for service; and the board will report unfavorably should it have a reasonable doubt of his efficiency in any of these particulars." The circular closes with a series of written questions illustrative of the general character of the examination which the candidate has to undergo. The sample questions are taken from the records of a board recently in session in New York city and cover the subjects of arithmetic, geography, history and literature, chemistry, physics, anatomy, physiology, surgery, hygiene, pathology and bacteriology, therapeutics, materia medica and toxicology, practice of medicine and obstetrics and diseases of women and children.

The circular refers to the establishment of the Army Medical School for the benefit of the passed candidate, and to the intention of the Surgeon General to recommend the assignment for duty as attending surgeons in the principal medical centers of the United States of the medical officers who have not yet passed their examinations for promotion to a majority. It also provides for a preliminary examination into the physique and general education of a candidate at the military post nearest his home, to save him in case of failure the needless expense of travel to the city in which the board is convened. At every session of the examining boards many candidates have been rejected for defective physique or elementary education. These men should indeed never have become candidates, and Surgeon General Sternberg now proposes that only those who need have no fear of being rejected on these preliminary, but essential grounds, shall be put to the expense of travel for examination by the board.

The examining board to be convened next autumn will probably meet in Washington, D. C., and be composed of the faculty of the Army Medical School.

## CONCEALMENT OF EPIDEMICS.

If any lesson has been thoroughly learned by the sanitary authorities of the United States, it is that concealment of the first cases of contagious disease is a dangerous and costly practice. We observe that the authorities of Naples are now making denial of the existence of cholera. Marseilles and Toulon similarly denied its existence until the deaths from the disease became so numerous that it could no longer be concealed. The policy of concealment is always adopted under specious pleas of the damage to commerce, the carrying trade and travel. It induces false security on the part of the local inhabitants, and is cruel to those who unwittingly get caught in the trap. Worse, however, by encouraging free ingress to the stricken city, and having no inspection of those going out of it, the epidemic is made more violent in the place itself, and spreads to a greater number of places. Hamburg tried the concealment plan, as long as it would deceive anybody, and it was the knowledge of the European tendency to hide the ravages of contagious diseases that induced Congress to pass the law providing for foreign inspection service. It is only fair to the city of Naples to state that the probabilities of a great epidemic there at this time are at a minimum. The great improvements in the streets, the miles of new pavements, the opening up of new and broad thoroughfares through former squalid tenement house districts, have greatly improved the situation since the great epidemic of 1887–88. The drainage is excellent and the drinking water good, but meanwhile our own sanitary authorities will do well to place credence in the reports of our own government inspectors in preference to biased local reports.

## MUNICIPAL AUTHORITY OVER ADULTERATIONS.

One of the chief functions of a municipal government, whether wisely exercised or not, is to protect the health of its subjects. With its constitutional authority physicians ought therefore to be somewhat familiar. In the case of the State v. Fourcade, recently decided, the Supreme Court of Louisiana says, in discussing the constitutionality and legality of an ordinance of the City of New Orleans concerning the adulteration of milk, that a legislature may delegate to municipal corporations power to adopt and enforce ordinances of special local importance, though general statutes exist, relating to the same subjects. An ordinance must be authorized, and must not be repugnant to a statute over the same territorial area, but if there be no other conflict between the provisions of the statute and ordinance, save that they deal with the same subject, both may be given effect. The resulting or correlative doctrine is now too firmly established to admit of serious question—that the same act may constitute two offenses, viz., a crime against the public law of the State, and also a petty offense against a municipal regulation. The public welfare, requiring the maintenance of peace and good order, as well as of careful sanitary regulations, in cities and towns, renders summary proceedings, in many cases a necessity; and such are commonly secured by municipal regulations. Violations of municipal ordinances constitute a class of offenses that are, in general, throughout the country proceeded against summarily, and the right of trial by jury in connection therewith, cannot be constitutionally demanded. An ordinance is not, in the constitutional sense, a public law. It is a mere local rule or by-law—a police or domestic regulation—devoid in many respects of the characteristics of the public or general laws. In this case a city ordinance was attacked as being unconstitutional, illegal, and violative of the laws of the State; the specific objection made being that the State having adopted a standard of adulteration, it was the duty of the municipality to have made its standard identical with that of the State, and that, the two standards not being identical that of the city, by reason of that fact, was illegal. But, as already explained, the offense charged under the city ordinance would be a separate and distinct offense from that which would have been charged under the State law, while the State's standard would be applicable exclusively for and as descriptive of a State offense. Where the same act constitutes two offenses against separate jurisdictions, it is analogous to those cases where the same act is punishable under a congressional statute and also under a State law. The two offenses in such a case being different, each may be punished without violation of the constitutional inhibition against placing one twice in jeopardy for the same offense. These views are sustained by many authorities. And the general assembly of Louisiana in conferring upon the common council of New Orleans the powers it did in its charter, must have contemplated that it would adopt a standard of adulteration as to drinks; and that adopted by it not being shown to be unreasonable or arbitrary, or as passing beyond a fair measure of correction for the evil against which it seeks to guard, must be upheld.

## DOMESTIC CORRESPONDENCE.

### Report on Cheese Poisoning Cases at Mansfield, Ohio.

*To the Editor:*—In reply to your favor of July 14th, regarding a report of the so-called "cheese poisoning" in this city, I beg leave to say that the reports in the newspapers in reference to it were as usual very much exaggerated. It is true that we had some fifty or sixty persons who had eaten a certain make of cheese who were taken suddenly and violently sick, but with no fatal results. The cheese in question was made by Mr. Mabee who lives about five miles from this city and who has manufactured cheese for some thirty years and sold it in this city without any bad results, so far as we have any knowledge, until this occurrence which you refer to took place.

On investigation we learned that Mr. Mabee purchases milk from the farmers in his immediate vicinity, and as a rule, makes three cheese a day which weigh from twenty-four to twenty-five pounds each. The cheese of each day is numbered the same, and on this occasion the cheese, which were all made from the same curd, were numbered 55. One of the three was sold to a grocer by the name of J. P. Hering who retailed the entire cheese within twenty-four to thirty-six hours after he received it; on investigation we found that *everybody who was taken ill with the peculiar sickness had eaten cheese, but that everybody who had eaten cheese did not get sick;* but the sickness *all occurred* among those who had bought and eaten of this particular cheese which was very spongy and moist; two pounds of which I obtained of those who had bought and eaten of the cheese, and were taken sick shortly after eating it. Those two pounds were sent to Secretary D. C. O. Probst of the State Board of Health who turned it over to the State Dairy and Food Commissioner, Dr. McNeal, who with an expert cheese maker, Mr. Hurd, visited this city and examined into the character of the symptoms of those who were taken sick, together with the process employed in the manufacture of the cheese.

The second cheese was sold to a grocer by the name of P. P. Ford with the same results as in the former case, except that he did not sell more than *half* his cheese before he learned of the poisonous results from the use of it, and stopped its sale immediately. It is only just to say that the first groceryman had sold all his cheese before he learned that it was making any one sick.

The third cheese was sold and has been taken to Columbus for chemical analysis, a report of which, together with an analysis of the samples sent previously, will be sent me later on.

In this investigation it was interesting to note that the two grocerymen who bought the cheese lived in widely different sections of the city and that the number of cases of sickness corresponded with the amount of cheese sold; in other words, there were more than twice as many cases of sickness occurred in the Hering district where the *entire cheese* was sold, than there were in the Ford district where only *half* the cheese was sold. It is also interesting to note that the degree of sickness depended on two particular factors. First: The amount of cheese eaten. Second: the physical strength of the person who ate it. In every instance where children, or old persons who were feeble, had eaten the cheese they were afflicted much more seriously and in some instances they were so prostrated, especially in the case of the aged, that their lives were despaired of; whilst another who was strong and hardy and ate of the same cheese in the same quantity was not nearly so sick, if sick at all, whilst others were more or less affected according to the amount of cheese they had eaten and the physical strength they had to counteract the effects of the alleged poison.

One very interesting case occurred in which the mother had been taken sick from eating the cheese and shortly afterward her nursing babe which had been nursing her, was taken sick with the same symptoms, although it had not eaten any of the cheese at all; showing that the poison which produced the sickness was not only a local irritant to the stomach, but also assumed a constitutional character and was eliminated through the lacteal glands. The symptoms were those of marked prostration in the more serious cases and modified according to the amount of cheese eaten and the strength of the person who ate it; consisting of a marked reduction of the cardiac force, showing a partial failure or paralysis of the heart; some of the cases being entirely pulseless with cold hands and feet and cold perspiration, followed by vomiting and later by purging and general prostration. These symptoms obtained in every case to a greater or less degree, so far as we were able to learn from the patients and their attending physicians.

As to whether the poisoning was the result of Vaughn's tyrotoxicon remains to be determined by the chemical analysis which will be immediately instituted by Commissioner Dr. McNeal.

These cases of so-called "cheese poisoning," the result of eating certain cheese, have been of quite frequent occurrence in this vicinity. In 1888 and 1889 I sent samples of cheese to the State Board of Health from this city which were supposed to contain tyrotoxicon, but on investigation by Professors Howard and Webber of Columbus and Prof. Schweintz of the Bureau of Animal Industry of Washington, they were unable to find Vaughn's tyrotoxicon in a single instance, notwithstanding they followed the directions given by him for its detection. Experiments were conducted by Prof. Webber at that time by feeding animals with the poisonous extracts of cheese, with no results. But these experiments on animals are very questionable, as we are all aware that animals can, as a rule, eat decomposed organic matter without any serious results; while on the other hand, if eaten by humans, it would produce sickness if not fatal terminations. The fact that tyrotoxicon was not found in the cheese was no evidence that a poisonous compound, the result of fermentation, was not the cause of the sickness; and especially is this true, as Prof. Vaughn has found poisonous substances in cheese since his discovery of tyrotoxicon, which he claims are sometimes, under certain circumstances, the cause of sickness.

In this same investigation which I have referred to, and which was conducted by the State Board of Health in 1888, bacteriological examinations were made by Prof. Detmers with negative results. Of course, we may have fermentative products of an alkaloidal character which could not be detected by bacteriological examinations. The bacteriologist would only be capable of determining a fungus or a microbic toxicant, if such existed, but with alkaloidal products his investigations would prove futile.

Since these investigations by our State Board of Health, all of which resulted negatively so far as Vaughn's tyrotoxicon was concerned, the State Board of Health considered it useless to conduct any further investigations for that poison. Yet at the same time there is no question but what there is a "poison" of some character which occurs in the manufacture of certain kinds of cheese, which is evidently the result of *fermentation*, and while it may not always be tyrotoxicon, it is possible that under certain circumstances it is; and under others it is certainly some compound analogous to tyrotoxicon which as yet has not been discovered, and which will be sought for in the chemical analysis to be instituted by the State dairy and food commissioner, the result of which we will watch with great interest, as it is to be hoped that he will be able to discover the cause, origin and composition of the substance which produces these perplexing outbreaks of so-called "cheese poisoning" which usually occur in this section of the country in the summer and fall, so far as I have been able to observe, and usually occur in cheese that is made during the hot weather.

That this is the result of fermentative changes is certainly quite evident. First: for the reason that brands of cheese which are made from pure, sweet milk and are made without any fermentation except that particular ferment produced by the use of *rennet* for curdling the milk, does not produce "cheese poisoning." Second: that "cheese poisoning," so far as I have been able to ascertain, has occurred in those brands of cheese which are subjected in their manufacture to certain fermentative changes, either *purposely* or *accidentally*. Very respectfully submitted,

R. Harvey Reed, *Health Officer*.

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## Advertise in the Journal.

Saginaw, Mich., July 17, 1893.

*To the Editor*:—Will you kindly furnish me the address of the firm who handle the sterilizer that was on exhibition at Milwaukee? Yours, S. A. McLean,

Bay City, Mich.

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## State Board of Health of Pennsylvania.

Philadelphia, July, 1893.

*To the Editor*:—The recent session of the legislature of this State was marked by an unusual interest in all matters pertaining to the protection of the public health. A step of great importance was the passage of an act making the establishment of Boards of Health compulsory in all incorporated boroughs in the State. As these Boards are by the terms of the law required to report to the State Board of Health, we may hope that in the course of the next six months, the sanitary organization of the State will be so complete that the State Board will have accurate and early information of all outbreaks of contagious disease. Although the legislature declined to increase the very meager appropriation to the State Board of Health, it granted the request of the Board to appropriate the sum of $50,000, to be used in case of serious emergencies, with the approval of the Governor. In the event of the advent of cholera, this will enable the Board to take immediate and effective action to check its spread.

Another measure of considerable importance was the establishment of a State Quarantine Board, to which is assigned the control of maritime quarantine at the Port of Philadelphia, which includes all ports of entry on the Delaware river above the State line. This Board is constituted as follows:

The President of the College of Physicians of Philadelphia or a member of said college to be designated by the President;
The Secretary of the State Board of Health;
The President of the Philadelphia Maritime Exchange or a member of said Exchange to be designated by the President;
The Health Officer of Philadelphia appointed in pursuance of the Act to which this is a supplement;
The Quarantine Physician provided for in this Act;
A sixth member to be appointed by the Mayor of Philadelphia;
A seventh member to be appointed by the Governor of Pennsylvania.

The aim of the new Board is to act in harmony with the quarantine authorities established at the mouth of the Delaware Bay by the United States Marine Hospital Service. The protection to this port will be threefold: First, the United States Marine Hospital inspection and hsspital service near the Delaware breakwater. Second, the United States Marine Hospital disinfecting plant at Reedy island, forty miles higher up the bay, and third, the State quarantine station, established at the old Lazaretto, a short distance below the city of Philadelphia.

The purpose is to have such intimate coöperation between the several stations, that absolute protection will be assured with the least possible interference with commerce and travel. With this triple cordon of coast defence, combined with the system of train inspection which our Board is arranging in connection with the United States Marine Hospital Service, and the appointment of a Supervising Inspector in each county for special service in the presence of cholera, our Board feels that it is quite ready for any emergency which may occur.

Another Act passed which promises valuable results in the future, was that establishing a State Board of Medical Examiners on which the State Board of Health is represented in the person of its president. A communication just received from Berlin, informs me that large numbers of diplomas of the so-called American University of Philadelphia, bearing the signature of the infamous John Buchanan, and issued by one Charles Sayer, in London, at the moderate price of $10 apiece, are being obtained at the present time in Germany. As is well known, in this country, this fraudulent institution, together with others of a similar character, were stamped out by the courts in this city in 1880; and yet it is evident that they are still making the name, "American Graduate" a stench in the nostrils of the German public. It is sincerely to be hoped that medical examining boards will soon be the rule in every State in the Union, and that in this way we shall be able to blot out this shameful reproach.

Bills for preventing the adulteration of food and drugs, and for the regulation of the sale of milk and of meats were unfortunately either lost in the Assembly or vetoed by the governor. The health of school children was considered in an Act which became a law, compelling school boards to make proper sanitary arrangements in all schools under their jurisdiction.

On the whole, therefore, sanitarians have a right to congratulate themselves that this old commonwealth is slowly arousing from its lethargy in regard to this most important of all governmental questions, the protection of the public health.

Yours respectfully,

BENJAMIN LEE, *Secretary*.

State Board of Health of Pennsylvania.

### The Woods are Full of Them.

LOUISVILLE, KY., July 21, 1893.

*To the Editor:*—Can you recommend a good and honest lady or gentleman to canvass subscriptions for two old, established magazines on a liberal commission?

Your early reply will oblige

Fraternally yours,

PAUL KRATZ, Publisher.

## NECROLOGY.

**Edward Loomis Smith, M.D.**, of Seattle, Washington, was ound dead in his bed on the morning of July 12, 1893. The end came quietly and peacefully as he had often expressed a wish that it might. He had been a sufferer from heart disease for many years so his sudden death was no surprise to his most intimate friends.

Dr. Smith was born at Pittsford, Munroe county, New York in 1840, and received his literary training at the Genesee Wesleyan Seminary, at Lima, N. Y. He took two courses at the Medical Department of the University of Buffalo, and afterwards received the degree of M.D. from the Cooper Medical College at San Francisco, California. He served as a medical officer with the Twelfth United States Infantry at Angel Island, California, during 1873 and 1874, after which he practiced in the towns of Quincy and Laport, California, coming to Seattle to locate in 1877.

His genial disposition and open generosity, together with his professional ability, soon won for him a host of friends and made him one of the best known surgeons in the Pacific northwest. He inspired confidence in his patients and was always kind to his brother practitioners. His surgical experience was very extensive, he having been chief surgeon at Providence Hospital for many years.

He was one of the organizers of the King County Medical Society and was the first president of the Washington State Medical Society; he was also a member of the Seattle Medical and Library Association, California State Medical Society and the American Medical Association.

Dr. Smith always took great interest in the State militia, having served as brigade surgeon and surgeon general on Governor Ferry's staff. He held the same position on Governor McGraw's staff at the time of his death and was buried with military honors. J. B. E.

## SOCIETY NEWS.

**Official Delegates to the Pan-American Medical Congress.**—Practically all of the governments have appointed official delegates to the Congress in response to the invitation by the President of the United States. The United States government will be represented by six delegates. The larger cities of all the Latin-American countries have appointed delegates to participate in the proceedings of the Sections on Hygiene, Climatology and Demography, and on Marine Hygiene and Quarantine, and similar appointments will be made by the cities of the United States. Seventy-six similar delegates have so far been appointed by the governors of States in the United States. A large number of delegates have been chosen by the medical colleges of the United States and other American countries to attend the Section on Medical Pedagogics, under the presidency of Professor J. Collins Warren of Boston.

Dr. Ernest Hart, editor of the *British Medical Journal*, and Prof. Dr. Czerny, of Heidelberg, will be among the distinguished guests. The latter is booked for the Pan-American excursion to Rome by the "Werra."

**Section on Materia Medica and Pharmocology, Pan-American Medical Congress.**—A Section on Materia Medica and Pharmocology has been organized under the executive presidency of Professor Joseph P. Remington of Longport, N. Y., with Professor F. G. Ryan, 3739 Brown St., Philadelphia, as English-speaking secretary. This Section promises to be one of the most important of the entire Congress. Delegates have been invited from all the pharmaceutical societies and colleges in all the Americas. Those contemplating attendance are invited to prepare papers on pharmaceutical topics. Titles should be sent at once to Professor Ryan, Secretary.

**The Vermont State Medical Society** will hold its Eighteenth Annual Meeting in Rutland, Oct. 12 and 13, 1893. The president is Dr. R. M. Wilder, Swanton; D. C. Hawley, Burlington, secretary; chairman committee of arrangements, Dr. C. S. Caverly, Rutland. The midsummer program can now be obtained from Dr. Hawley, and the regular program from that gentleman about October 1.

## SELECTIONS.

**Chloride of Sodium Infusion in the Fasting Insane.**—That fatal termination frequently follows in the more severe melancholias notwithstanding the most careful artificial feeding is a fact within the experience of every alienist. It makes only a trifling difference in the progress of these cases, as to what efforts are put forth to vary the quality and quantity of food; the patient gradually emaciates, the secretions become foul, the bowels sluggish, and vomiting may occur after each use of the æsophageal tube. The patient rapidly grows weaker, finally dies from exhaustion notwithstanding that ample food is being ingested. Reference is not intended here to the class of cases where refusal of food is based on delusion and in which there is no somatic disturbance; these cases may be fed artificially for months or years without causing any special disturbance of the health. The brilliant results that have been achieved in surgery, obstetrics and internal medicine by the use of subcutaneous and intra-venous infusions of salt solutions have encouraged Ilberg (*Zeitschrift fur Psych*) and Lehmann (*Centralblatt fur Nerenhkde und Psych*, June 1893) to try them in the severe melancholias accompanied by refusal of food. The latter writer reports four, in three of which results were achieved by the hypodermatic injection of 600 cubic centimeters of saline solution, The injections were made at intervals of two or three days according to the condition of the patient. After each injection the general state of the patient was markedly improved, the lips would become moist, the tongue would clear and in several cases the patient would begin to take food voluntarily. In one case that terminated fatally, death was found to be due to a perforating ulcer of the stomach, due to swallowing a fragment of glass with suicidal intent.

**Unilateral Hypertrophy of the Face.**—D. W. Montgomery (*Medical News*, July 15, 1893) adds another case to the few reported of this extremely rare affection. Additional interest is found in these cases owing to the fact that the sensitive and motor nerves of the affected part come from different roots, and if we ever solve the nature and seat of trophic nervous influence it will probably be from a study of the nerve supply of these parts.

Some idea of the enlargement may be gained by the statement that the distance from the philtrum to the tragus is six and one-eighth inches and only four and seven-eighths on the right or unaffected side. The bones as well as the skin and its appendages were hypertrophied, the hairs were coarse and heavy and the mouths of the sebaceous glands large and patulous giving the skin a "saddle leather" look. Portions of the skin removed for microscopic study showed an extremely friable condition of the chorion which was enormously increased in thickness, and round-celled infiltration along the vessels. The dilated sebaceous glands in many cases contained masses of concentrically arranged epithelial cells that had undergone hyaline degeneration. These masses produced tumor-like elevations of the surface, and seemed to act like foreign bodies as the surrounding connective tissue was richly infiltrated with small round cells.

**Trapacocaine in Eye Practice.**—Dr. Ferdinands has given in the *British Medical Journal* his favorable estimation of the Java leaf cocaine. The anæsthesia produced by it in ophthalmolic use has been more reliable than the older drug, the effect is more enduring and may be attained in parts that have become inflamed. There was no appearance over the corneal surface of that haze that has been so often a troublesome consequent on anæsthesia by cocaine. A strength of two or three parts per hundred, in aqueous solution, has been efficient in the general run of cases, while a 5 per cent. strength was used safely for anæsthesial applications to the deeper seated parts of the eye. The solutions should be made with distilled water. They keep well and continue efficient for months. In only one case were untoward results observed, and in that case the surgeon used a 10 per cent. solution. There is virtually no mydriasis nor hemostatic action.

**Unilateral Tremor Associated with Tumor of the Cerebral Peduncle.**—Blocq and Marinesco (*Le Mercredi Medical* No. 22. page 269) furnish an additional uncertainty as to the origin of the tremor of paralysis agitans in the report of a case of that disorder in which a tumor the size of an olive was found in the midst of the right crus cerebri. The fibers of the oculo motor nerve, superior cerebellar peduncle and crusta all escaped. The tremor which was confined to the left side was believed by the writers to be due to irritation of the pyramidal fibers. This explanation seems gratuitous as the patient died from tuberculosis of the lungs and it is quite possible that the tumor bore no relation to the tremor. A careful study of the recent literature of paralysis agitans shows that the disease probably has its origin in the motor nerve endings. In this case we may have had a paralysis agitans with tuberculosis and secondary tumor of the crus.

**A Study of Losophan.**—In a thesis by Felix Descottes presented to the Paris Faculty of Medicine, the author formulates the following conclusions: In the treatment of leg ulcers, losophan acted quite as well as any of the medicaments customarily employed in this condition. In primary lesions of a syphilitic character, losophan had a very beneficial action and determined a rapid cicatrization of chancre, although employed to the exclusion of general constitutional treatment. The curative effects of losophan were especially manifested in simple chancre or soft chancre. Patients suffering from folliculitis and eczema, though not always completely cured under treatment by losophan experienced in all cases a great amelioration of the condition. In circumscribed lichen simplex, losophan successfully cured the disagreeable and often painful pruritus which almost always accompanies this malady. In prurigo with obstinate pruritus the same beneficent results was obtained. In the estimation of the author, these results are sufficient to enable us to classify losophan among the most efficient of our remedies for certain skin diseases. Dr. Descottes employed losophan in much stronger mixtures than those cited by other authors and never noted any irritation of the skin. He used 8 per cent., 10 per cent. and sometimes 20 per cent. ointments and occasionally the pure powder. Saalfeld used but 1 to 2 per cent. ointments or solutions. Descottes was successful in some conditions which had not heretofore responded promptly to losophan.

## MISCELLANY.

**Cholera.**—Cholera has appeared in Naples. There were four fatal cases on the 16th and 17th of July. The diagnosis was verified by bacteriological examination. Its origin has not yet been traced.

The British steamer *Blue Jacket* from Marseilles, arrived at Cardiff July 19. It had cholera on board and was ordered in quarantine. The *Blue Jacket* sailed from Kertch, in the Crimea, June 24. It called at Constantinople and proceeded thence to Marseilles, from which port it came direct to Cardiff.

There were two cases of cholera on the *Blue Jacket*. Both patients are recovering. The other members of the crew are in a healthy condition.

The cholera is raging among the poorer classes in Moscow. The Director of Prisons upon learning that there was cholera in the Moscow prisons ordered a majority of the prisoners to be removed to four other cities, thus increasing the danger of a spreading of the infection. There have been no cases so far in St. Petersburg. In Polodia and other infected places the death rate has not lessened.

**Must be Examined.**—The Iowa State Board of Medical Examiners, is now sending out the following circular: The Announcement and Catalogue of your ——— for the session ——— is before me. I regret to find that your requirements for graduation do not conform to our "Schedule of Minimum Requirements," a copy of which, together with the resolutions adopted by the Iowa State Board of Medical Examiners relating thereto, are sent herewith. I have underscored the particulars in which you lack conformity. I am directed to say in advance, that unless your requirements for graduation are amended so as to be in complete accord "by announcement and practice, in letter and in spirit" with our schedule, as shown herewith, your graduates cannot be admitted to practice in this State, except upon satisfactory examination before this Board.

Respectfully, J. F. Kennedy, M.D., *Secretary*.

### COLLEGE NOTES.

**Northwestern University Medical School** (Chicago Medical College) has just completed a new laboratory building that is one of the largest and best in this county, and at a cost of $150,000. It is a five story structure, 106 feet wide by 110 feet long.

It contains, besides the usual offices, lavatories, lockers for students' clothing, etc., two large lecture rooms and one quiz room, laboratories of physiology, pharmacy, botany, pharmacology, normal and pathological histology, bacteriology, chemistry, anatomy and operative surgery, together with smaller rooms for special class instruction and individual work. The entire building is wired for electric lighting, and is heated by steam throughout. There is hot and cold water in all rooms, compressed air and live steam in the laboratory and lecture rooms, an ice machine for cooling the room in which the anatomical material is preserved, and in which any desired temperature may be easily maintained.

It is expected that these laboratories, with the possible exception of the laboratory of physiological research, will all be in operation at the beginning of the coming term.

The new college building, in course of erection on the same lot, will be completed by the opening of the college year. It has been designed especially for clinical teaching. There will be two floors devoted entirely to clinics which will be in operation both forenoon and afternoon. There are two large amphitheatres on the same level as the clinic rooms, to be used for college clinics, as well as for didactic teaching.

This building is 55 feet wide by 106 feet long, and, in architectural features, corresponds with the laboratory building.

**Rush Medical College.**—In consequence of the number of foreign visitors to the city of Chicago during the year of 1893, many of whom have made inquiries relating to this college, a limited edition of the Announcement for this year has been issued in the French language.

**Appointment.**—Dr. Emory Lanphear of Kansas City, has resigned from the University Medical College and accepted the chair of Operative Surgery and Clinical Surgery in the Kansas City Medical College.

## LETTERS RECEIVED.

(**A**) Anderson, Wm., Indiana, Pa.; Atkinson, W. B., Philadelphia, Pa.; Ames, L. L., Onaga, Kan.; (**B**) Burford, Wm. B., Indianapolis; Bacon, C. G., Fulton, N. Y.; (**C**) Corson, Hiram, Plymouth Meeting, Pa.; Carpenter, J. G., Stanford, Ky.; Cornick, Boyd, Knickerbocker, Tex.; (**D**) Dunglison, R. J., Philadelphia (telegram); (**E**) Eagleson, J. B., Seattle, W. T.; (**F**) Fogg, John S., Biddeford, Me.; Flesher, Paul, Elkhorn, W. Va.; Florentine, F. B., Saginaw, Mich.; (**G**) Grant, H. H., Louisville, Ky.; Gihon, Albert L., U. S. Navy; (**H**) Hamiell, E. K., Newark, N. J.; Hinde, Alfred, Chicago; Heckard, M. O., Chicago; Holmes, Bayard, Chicago; (**J**) Jenkins, J. C., Everett's, N. C.; (**K**) Kratz, Paul, Louisville. Ky.; Kern, W. B., Hastings, Neb.; (**L**) Lee, Benjamin, Philadelphia; Lynk, M. V., Jackson, Tenn.; (**M**) Mansfield Bookbinding and Index Co.; McLean, S. A., Bay City, Mich.; Montezuma, Carlos, Barry, Washington; McDonald, Mrs. S. M., Washington, D. C.; Miller, J. E., Providence, R. I.; McIntyre, J. H., St. Louis, Mo,; Malted Milk Co., Racine, Wis.; (**O**) Orleans Parish Med. Soc., New Orleans, La.; Owens, T. B., Roxbury, Mass.; Owen, A. M., Evansville, Ind.; Ochsner, A. J., Chicago; (**P**) Patterson, R. S., Port Huron, Mich.; Park, J. Walter, Harrisburg, Pa.; Parke, Davis & Co., Detroit, Mich.; Parr, Thos. S., Indianola, Ia.; (**R**) Rush, Jas. D., Apalachicola, Fla.; Reed, R. Harvey, Mansfield, O.; Rosenberger, J. S., Chicago; (**S**) Seymour, W. W., Troy, N. Y.; Schaufelberger, F. J., Hastings, Neb.; Sajous, Chas. E., Paris, France; Schieffelin & Co., New York; Shober, W. A., Ligonier, Ind.; Small, E. H., Pittsburgh; (**T**) Trabert, J. W., Annville, Pa.; Truax, J. G., New York; (**V**) Vauden, Geo., Caperton, W. Va.; (**W**) Waxham, F. E., Denver, Col.; Woodbury, Frank, Philadelphia; Wyman, Hal., Detroit; (**Y**) Young, Arthur, Prescott, Wis.

# THE PUBLIC SERVICES.

**Civil Practice by Army Medical Officers.**—The following from a recent issue of a military journal shows that in France as in this country the civilian practitioner sometimes considers himself unjustly treated by his military colleague: "The French War Minister has decided not to permit French army medical officers to combine private practice with their military duty, except where they render medical service gratuitously, and as a rule they must confine their civil practice to assisting civil practitioners without competing with them. Hitherto medical officers. being duly qualified practitioners, have been allowed to practice their profession outside the army and the present decision is due to the objections of civil practitioners."

The U. S. Army Regulations of 1814, in which the duties of medical officers were for the first time distinctly specified, prohibited civil practice in these terms: "No surgeon of the army shall be engaged in private practice;" but this regulation has never been enforced. One officer inquired of Surgeon General Lovell concerning it and was informed that it was intended only to prevent neglect of duty, which might be occasioned by entering exhaustively into practice. At one time the physicians of Sackett's Harbor, N. Y., protested against the practice of the Post Surgeon of Madison Barracks, alleging that he came into injurious competition with them. The reply was to the effect that if no breach of professional etiquette nor any improper means to obtain professional employment was charged the War Department could not with propriety interfere in the matter. Medical officers had a right to give their services to whomsoever they pleased, and they had always been permitted to do so. Indeed, at small posts it was desirable that they should do so to extend their sphere of action and experience. The present ruling is that medical officers must not establish an office nor solicit practice, but if requested to attend in any case they are at full liberty to do so, provided it can be done without interfering with their regular duties. It would be ungracious and indeed unjust to citizens to deprive them by War Department orders of any benefit they might derive from the care of a military surgeon.

**Immigrant Inspection Service.**—Surgeon P. H. Bailhache, United States Marine Hospital Service, stationed at Ellis Island, is organizing a corps of several hundred physicians, whose services may be needed in the event of cholera reaching this port. If cholera does reach New York it is proposed to send one of these physicians on each immigrant train that leaves here: This physician will accompany the immigrants to their destination and watch them carefully for symptoms of contagious or infectious diseases. Already a large number of applications from physicians who want to serve on this corps have been received. This is the immigrant inspection service recommended by the Sanitary Council of the Mississippi Valley, and similar to the one organized by the late National Board of Health.

**The Sick-Bay on the Cruiser New York.**—The Surgeon General of the navy has recently made a report to Secretary Herbert on the apparently poor arrangements for the care of the sick on the new cruiser, *New York.* He hopes to have some of the defects remedied before the vessel shall be sent out on a cruise. The adopted plans locate the sick-bay too far forward near the magazine and torpedo tubes. Surgeon General Tryon urges that the sick should be placed amidship, or in some other part where they can have more room, light and air.

**Army Changes.** Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 15, 1893, to July 21, 1893.

First Lieut. James D. Glennan, Asst. Surgeon, ordered to report to the president of the examining board, for examination for promotion.

Major Peter J. A. Cleary, granted leave of absence for four months, on surgeon's certificate of disability.

First Lieut. A. E. Bradley, Asst. Surgeon, ordered to report to Lieut.-Col. Dallas Bache, deputy Surgeon General, president of examining board at Omaha, Neb., for examination for promotion to grade of Captain.

First Lieut. J. T. Clarke, Asst. Surgeon, will on the abandonment of Camp Poplar River, Mont., proceed to Ft. Sully, S. D., for temporary duty, and on return of First Lieut. Bradley, proceed to and take station at Ft. Omaha, Neb.

Major Calvin DeWitt, Surgeon U. S. A., is granted leave of absence for one month, to take effect between the 15th and 30th inst. Par. 2, S. O. 78, Hdqrs. Dept. of Texas, July 11, 1893.

**Navy Changes.** Official list of changes in the Medical Corps of the U. S Navy. for the week ending July 22, 1893.

P. A. Surgeon T. B. Bailey, from Philadelphia Hospital, and to the U. S S. "Machias."

Medical Inspector W. M. Jones, from League Island Navy Yard, and wait orders.

Medical Inspector G. H. Cook, to the Navy Yard, League Island.

Surgeon S. H. Dickson, from Marine Barracks, and to the "Dolphin" temporarily.

Surgeon P. M. Rixey, from the "Dolphin," and granted temporary leave.

P. A. Surgeon J. D. Gatewood, temporary duty at Marine Barracks.

P. A. Surgeon A. R. Wentworth, from the "Atlanta," and granted leave.

Surgeon W. G. Farwell, to temporary duty on the "Franklin."

Surgeon C. T. Hibbett, from the "Franklin," and to the "Detroit."

Asst. Surgeon C. W. Brownell, ordered to receiving ship "St. Louis."

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## ORIGINAL ARTICLES.

### THE FUNCTION OF THE KIDNEYS.

BY GEO. W. WEBSTER, M.D.

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*Origin of Urea and Uric Acid.*—Some of the recent editorials on this subject would lead us to infer that the function of the kidneys is not well understood, or that there is a wide difference of opinion regarding it.

Merck's *Bulletin*, Dec. 18, 1892, says editorially: "Through the agency of the epithelial cells lining the uriniferous tubules the urea, uric acid and creatine are normally *formed* and *discharged*," etc. Again: "The function of the glomeruli is *comparatively simple*, being entirely under the control of the vasomotor system."

Indeed, such statements as the foregoing are comparatively common, but ought not to go unchallenged. A knowledge of physiology should precede and serve as a basis for rational therapeutics, and the more thorough and more nearly correct the former, the more scientific and satisfactory will be the latter.

Instead of calling the kidneys secreting organs and the urine an excretion, it seems more rational to say that we know that an average constant composition of the blood as regards normal constituents, such as sugar, etc., and of waste products such as urea, must be maintained, in order to preserve health and life.

*To the kidneys is assigned the duty of maintaining this invariable composition; of eliminating from the blood all those substances which do not belong to it normally, whether it be an abnormal constituent, or a normal one that has increased beyond the normal amount.*

The parts concerned are the glomeruli with Bowman's capsule, and the epithelium of the convoluted tubules.

There are two principal theories in regard to the secretion and excretion of urine.

Ludwig's mechanical theory, promulgated in 1844, that the urine is simply filtered in a dilute form by the glomeruli; further additions are made by osmosis and diffusion through the tubular epithelium.

In favor of this theory we find such physical conditions existing as would make such a theory tenable; we find the conditions favorable for osmosis, etc., and we may explain the failure of the proteids to pass, by saying that they do not filter readily through animal membranes. Against such a theory is the evidence, first, of analogical reasoning from what we know of other glands; second, the positive evidence. The urine is unlike the blood in composition and reaction; after destruction of the tubular epithelium, the urea is not eliminated but accumulates in the blood. If benzoic acid be given it is converted in the kidneys into hippuric acid, being formed synthetically in the kidney;—besides other evidence to be introduced.

The other theory, known as Bowman's vital theory, was introduced in 1842 and is as follows: filtration in the glomeruli; excretion of the specific constituents by the cells; the tubules; reabsorption of some water. But even this does not explain all the facts as shown by the following evidence:

First, then, as regards the filtration in the glomeruli and the statement in the paper referred to in which it is stated that it is a "comparatively simple process." In transudations elsewhere we find that they contain serum albumen. But serum albumen although a normal constituent of the blood, is not a normal constituent of the urine and is not allowed to filter through the capsule of Bowman under normal conditions. Egg albumen is allowed to pass, however. How does the capsule discriminate if it is only a filter?

Again, we find that sugar is a normal constituent of the blood, but not of the urine, although readily soluble in water. When, however, the percentage of sugar rises above the normal it is immediately allowed to pass, justifying the definition of the function of the kidney: "To maintain the average, normal, constant composition of the blood stream."

Furthermore, we find that in disease of the capsule, both sugar and serum albumen are allowed to pass freely. Blood pressure higher than the normal allows the albumen to appear in the urine. There is a limit therefore, to the extent to which the capsule can prevent the transudation of the normal constituents of the blood.

In the amphibian kidney, we find a double blood supply and we can introduce sugar and egg albumen into the circulation and they are at once eliminated.

If we cut off the blood supply to the glomeruli we find no sugar or peptones in the urine, although the blood supply to the tubular epithelium remains normal. We must, therefore, conclude that if they are not eliminated by the tubular epithelium they must be by the glomeruli.

In regard to high pressure in the glomeruli, we find that if the renal veins be tired, thus giving us a maximum pressure, there is no secretion. Therefore the conditions favoring glomerular filtration are, *a*, high blood pressure in the glomeruli; *b*, velocity of flow. The blood pressure is controlled and varied by the vasomotor nervous system.

And, lastly, urea and sugar are both soluble in the blood. The urea is eliminated because it is a waste product and no longer useful. The sugar is retained because it is of value in the production and maintenance of those chemical processes, the sum of which constitutes life itself. We recognize the purpose of the Divine plan without being able to explain the reason.

It seems too evident that the glomerular secretion instead of being a "comparatively simple" affair, is a complicated complex process, and that anything like a mechanical explanation is narrow, faulty, inadequate. Filtration and diffusion play their part but they are not masters of the situation.

Let us now consider the function of the tubular epithelium. In favor of the so-called vital theory we have the following evidence:

1. Indigo and bile pigment are eliminated by the cells of the convoluted tubes and Henle's loop.[1]

2. Uric acid is eliminated by the tubular epithelium in birds. The purpose is manifest. If it were eliminated by the malpighian bodies concretions might form, but while eliminated by the tubular epithelium it is constantly washed down by the urine.

3. If, in the amphibian kidney, we shut off the circulation from the glomeruli and then inject urea, it leads to an increased excretion of urea plus some water.

4. Sulphindigotate of soda is also eliminated by the tubular epithelium.

"If the blood becomes too alkaline, as it may by the conversion of vegetable salts of alkalies into alkaline carbonates, the renal cells separate the excess of these carbonates from the blood.

"If the alkalescence of the blood be diminished, perhaps by the liberation of sulphuric acid and phosphoric acid, caused by the decomposition of the proteids, of nucleins and licithins, the renal cells take up the neutral salts of the blood, separate them into acid and alkaline, convey the acid salts into the urine and the alkaline back into the blood until the normal alkalescence is restored."[2]

Therefore, we can say that the tubular epithelium excretes urea and some water and has other functions in maintaining the normal condition of the blood. But the how, is not known to us. We are here confronted with the problem, the life of the cell, a term of whose meaning no one has any conception. But we do know that it possesses those incomprehensible qualities which bring about synthesis in the organism.

### THEORY OF THE SECRETION OF THE URINE.

1. The secretion and excretion is partly mechanical and partly a vital process.

2. The water and most substances soluble in it, are eliminated by the glomeruli chiefly by filtration, the amount depending upon blood pressure in the glomeruli, provided at the same time we have *a*, velocity of flow; *b*, normal condition of the blood; *c*, intact condition of kidney structures; *d*, average amount of urea, salts, etc., (including those which act as diuretics) present in the blood.

3. That this blood pressure is under the control of the vasomotor system.

The function of the glomeruli is not mechanical alone, but also vital, as it will allow egg albumen, an excess of sugar, etc., to pass through but will not allow any serum albumen to pass under normal conditions, and no sugar unless it be in excess.

4. Urea, uric acid, etc., are eliminated by the tubular epithelium, the *concentration* of the urine therefore depending upon: *a*, the amount of salts in the blood; *b*, intact condition of the tubular epithelium. Some water is also eliminated by the tubular epithelium.

5. A hearty meal increases the quantity of urine by *a*, increasing the fluids taken; *b*, by increasing the proteids which increase the urea, it in turn stimulating the tubular epithelium.

Thus we see that the work done by the kidneys depends on the condition of the blood, this furnishing the normal stimulus and thus explaining why secretory nerves are not found, simply because they would be superfluous. The greater the percentage of abnormal constituents, or the excess of normal ones, the more active the kidneys.

6. There is a compensatory relation existing between the skin and the kidneys and cold applied to the skin increases the quantity of urine by diminishing the amount of sweat, and also by increasing blood pressure it increases renal pressure and thus the amount of urine.

7. In fever the renal artery is less full and therefore there is less urine.

8. In case of weak heart, dropsy is caused by *a*, increased venous pressure brought about by diminished arterial pressure; *b*, slowing of the current of blood and thus increased venous pressure in the kidneys, thus diminishing elimination of water.

9. Diuretics act in one of the following ways: *a*, by increasing pressure and velocity in the glomeruli; *b*, by acting locally on the tubular epithelium.

10. In hysteria, etc., where there is polyuria it is possible that there may be dilatation of the vessels entering the glomeruli, but this is pure speculation.

11. Certain substances as hippuric acid, are formed, synthetically in the kidneys.[3]

From the foregoing it must be evident that the composition of the urine must vary within rather wide limits even in health. There are in the urine:

1. Certain normal constituents in considerable amounts, whose origin, place of formation as well as composition, etc., are well known.

2. Others which appear only in small amounts.

3. Those which are found only under abnormal or pathological conditions.

4. Those which have been accidentally introduced as foods or medicine and are eliminated with the urine.

### ORIGIN OF SOME OF THE URINARY CONSTITUENTS.

The proteids are, by the action of the digestive ferments, converted into peptones; the peptones further converted by having a part of the nitrogen split off in the form of amido caproic acid, or leucin, an aromatic amido acid, tyrosin, amido succinic acid, or asparetic acid, and also glycocoll. These are probably the precursors of urea as shown by the experiments of Schulizen and Necki, Salkowski and Emeriem.[4] Hoppe Seylor and Salkowski regard cyanic acid as the immediate precursor of urea.[5] Dreschel considers that urea arises from the carbamate of ammonia. Carbamate of ammonia stands midway between carbonate of ammonia and urea.

But the question of interest and importance, (aside from the precursors) is, *where is urea formed?* The most complete and reliable researches as to where urea is generated have been made by W. von

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[1] Bunge, "Physiological Chemistry," p. 351.
[2] Bunge, "Physiological Chemistry," p. 351.
[3] Bunge, p. 317. Foster, vol. v, p. 136.
[4] Bunge, "Physiological and Pathologtcal Chemistry," p. 319.
[5] Op. cit.
[6] W. von Schroeder, "Archiv. of Exper. Path. in Pharm.," vol. xv., p. 364, 1882, and vol. xix, p. 373, 1875. Bunge, p. 364.

Schroeder.[6] He shows conclusively that urea is *not formed in the kidneys*, but merely excreted by them.

Although we would naturally turn to the muscles as the next most likely place of generation, he also shows that it is not formed here nor in the nervous system, and if it is present in the blood, the blood probably obtains it from the liver. The evidence in favor of its formation in the liver is both clinical and experimental and is abundant and conclusive. Experimental:[7]

1. The synthesis of carbonate of ammonia into urea occurs in the liver.

2. In disease of the liver as interstitial hepatitis, the elimination of urea is interfered with and the amount of ammonia rises from one-half gram (normal) to two and one-fifth grams in twenty-four hours in cirrhosis of liver.

3. The creatin formed in the muscle is also converted into urea in the liver.

4. The blood contains 1 part in 3,000 to 5,000 parts and the renal artery contains more than the renal vein.

5. In the case of leucin, there is distinct evidence that the conversion into urea is effected by the liver.[8]

6. The amount of urea is increased principally by proteid food.

The amount of urea is augmented in congestion of the liver or markedly diminished by such diseases of the liver as yellow atrophy, diabetes and hepatic cirrhosis.

8. In those diseases of the liver which interfere with urea formation, the immediate precursors of urea such as leucin, tyrosin, ammonia, cyanic acid, etc., are eliminated with and are found in the urine. It is evident therefore, that urea is formed in the liver from various substances brought to it by the blood stream, that the original source is the proteid foods, and that it does not all represent tissue metabolism; the amount of urea depending upon or being influenced by foods, breaking up of body proteids, diminution of or loss of blood, plenty of water and drugs—as morphin, the salicylates, mercury euonymin, arsenic, etc.

### URIC ACID.

This is one of the unilluminated pages in physiology. But in the following brief note I give the more recent views concerning this important, though much disputed question and I venture to quote rather fully and to give many references because the observers are not by any means a unit in regard to theories. The views of Sir Wm. Roberts seem to me to be particularly well sustained by evidence.

Uric acid is the nitrogenous end product which, next to urea, carries off most of the nitrogen from the body. The amount varies from 8 grains (average) to 35 grains on a flesh diet. Proportion to urea 1 to 45 (Landois), 1 to 32, (Haig, "Uric Acid," p. 10.)

### OCCURRENCE.

1. *Free Uric Acid.*—Not known physiologically, neither in the body nor in the urine. Known clinically and pathologically as the crystalline sediment in the urine, and as gravel and calculus in the urinary passages.

2. *Neutral Urates.*—Not known physiologically nor pathologically, only known as laboratory products.

3. *Bi-Urates.*—Known pathologically as components of gouty concretions in the tissues. Known in the urine only after the secretion has undergone (ammoniacal) fermentation. It is doubtful if they ever exist physiologically in the blood or the tissues.

4. *Quadri-Urates.*—These are specifically the physiological salts of uric acid. They exist normally in the urine and probably in the blood. They constitute the entirety of the urinary excretions of birds and serpents. All the morbid phenomena due to uric acid arise from secondary changes in the quadri-urates. (Sir Wm. Roberts, "Uric Acid, Croonian Lectures" 1892, p. 31.) He also says (p. 38): It would appear that whenever uric acid exists in the healthy body, it exists exclusively as quadri-urate. The quadri-urates may, therefore, be regarded as being in a special sense the physiological salts of uric acid, and as constituting the only form in which uric acid subsists in the living body in the normal state. It may, moreover, be inferred further that when uric acid gives trouble and originates morbid phenomena the mischief arises proximately from the uric acid department, in one direction or another, from this normal state of combination.

Viewed in this light, pathological gravel may be regarded as due to an exaggeration of the conditions which prevail in a less pronounced degree in the normal state; and an elucidation of these conditions may be reasonably expected to throw light on the etiology of gravel and calculus, and perhaps furnish hints which may be turned to therapeutical uses. The conditions of the urine which tend to accelerate the precipitation of uric acid are:

1, high acidity; 2, poverty in salines; 3, low pigmentation; 4, high percentage of uric acid.

The conditions which tend to postpone precipitation are:

1, lessened acidity; 2, richness in salines; 3, richness in pigments; 4, low percentage of uric acid.[9]

The foregoing conclusions furnish a key to the rational therapeutics of uric acid gravel, which resolves itself largely into preventive measures. Roberts also says that he found that lithium carbonate was a better solvent of uric acid than is any of the other three carbonates, and this well known fact has led to the universal employment of that remedy in this condition, and more especially to the indiscriminate employment of the various "lithia waters."

In the employment of these waters, the benefit derived is from the *water* and not from the lithia, as shown so well by Bunge (p. 357). Because the combination of uric acid with lithia is more soluble than with soda or potash it is thought best to treat these cases with the so-called lithia water, which simply implies an ignorance of Berthollet's law:

"We know that in solutions of bases and acids, every acid is distributed to all the bases in proportion to their quantity. It follows that only the very smallest portion of uric acid will combine with the lithia, the largest proportion combining with the preponderating quantity of soda which we introduce as chloride of sodium. The largest proportion of lithia will reappear in the urine united with the chlorine, with sulphuric and phosphoric acids. There will be no increase in the solubility of the uric acid."

Cheese is said by Bunge (p. 356) to be especially apt to cause the precipitation of uric acid in the urinary tract. It is much better to keep the urine alkaline by a diet of fruits containing the vegetable organic acids. After combustion of the acids the potash appears in the urine as a carbonate. Potatoes cause a strongly alkaline urine because they contain little albumen and therefore little sulphuric acid, and much malate of potash which is converted into a carbonate. Citrate of potash is probably the best drug to employ. Dose, 40 to 60 grains at night.

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[7] Bunge, p. 334.

[8] Foster, vol. v, p. 163.

[9] Roberts, p. 54.

### ORIGIN OF URIC ACID.

The locality of the formation of uric acid in animals has not been experimentally investigated, although this seems important from physiological as well as from a pathological point of view. The most complete investigations upon the subject of recent times have been made by von Schroeder and Minkowski. (Bunge, p. 342.) Minkowski shows that in birds, ammonia is a normal antecedent of urea, and that the uric acid is formed synthetically in the liver by the union of ammonia and a non-nitrogenous substance and imagines this latter to be lactic acid, having a common source in proteids; that it is increased by proteid foods and is independent of carbohydrates. This form of lactic acid is saccolactic acid and not the lactic acid produced by the fermentation of the carbohydrates.

In cirrhosis of the liver and in cases of phosphorus poisoning large quantities of lactic acid have been observed in the urine.[10] The liver is therefore probably one of the places of uric acid formation. In leukemia the amount of uric acid is double that in health on the same diet. It is not an antecedent of urea.[11] It is not a product of suboxidation.[12]

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# REMARKS ON THE TREATMENT OF DIABETES.

Read before the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

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It will be my aim in presenting the subject of the treatment of diabetes, to call attention to some facts which my own experience has impressed upon me and to one or two of the most recent suggestions that have been made in regard to it.

I believe that patients are often placed too quickly on a rigorous diabetic diet. A sudden, very great change in one's regimè will invariably disturb the appetite and if only one or two articles of food are constantly eaten a disgust for these will be produced. Very considerable depression is frequently noticed after such changes. In two cases that came under my observation, though in the practice of others, the sudden restriction of them to a diet that was uncongenial produced a disinclination for food, and growing out of this a diminished secretion of urine and apparently great mental depression and physical malaise which soon culminated in fatal diabetic coma. There may have been no causative relation between the restriction of the diet and the fatal result of the disease but as I watched the progress of the cases it seemed as though a degree of mental and physical depression was produced that intensified the disturbed nutritive changes which the disease caused. Often patients to whom a diabetic diet is distasteful can be educated to take it and even enjoy it. To accomplish this it is best to first ascertain what the individual's habitual regimen is. It can be modified day by day by diminishing first the amount of the articles that must finally be dropped and later omitting them altogether. In a majority of cases this is not a long process. By the end of the first week patients can usually be gotten onto a sufficiently restricted diet.

Moreover, it is frequently not necessary for patients to limit themselves to a strictly diabetic diet. How much of farinaceous food can be safely permitted to any one individual can only be learned by experiment. If the taking of a potato each day for dinner does not increase or its omission diminish the amount of sugar excreted daily by the kidneys it can, I think, be taken with safety. The diet which I prescribe is similar to that usually recommended. I generally permit the use of a little bread except in the severest cases and I prefer that patients should use ordinary wheat bread rather than gluten bread, for a feeling of false safety is usually engendered by its use and it is eaten too freely. I am inclined to believe the statement made by many good chemists that all the gluten flours on the market are very impure and contain a large percentage of starch. In a half dozen samples of such flour that I have tested starch was present in large amounts. Macaroni is forbidden in some diet lists and permitted in others. Practically, I find it can be taken without detriment by most diabetics.

Of drugs that have been recommended and somewhat widely used the last two or three years antipyrin has been in my hands the least useful. Germain See claimed for it a strong controlling influence over the production and excretion of sugar. In his hands it seemed to be of marked benefit. He recommended it especially when patients were weary of their diet, as by its use it was possible to return for a short time with safety to a mixed diet. I have had an opportunity repeatedly to try it in cases of moderate severity, cases that are amenable to treatment but relapse often. In these cases I have observed no uniformly good results from the employment of the drug. In most instances the glycosuria did not seem to be modified at all by it. In a few cases it seemed decided beneficial. Whenever I attempted to rely upon the administration of antipyrin and to discontinue the regulation of diet an increase of sugar in the urine took place. I was greatly disappointed in these results for I rely upon no one's therapeutic judgment more than upon Germain See's.

No drug has seemed to me so uniformly to give good results as Clemen's solution of arsenic and bromin. In 1885 I published a series of cases that were treated with this drug with good results. I might now extend this list very much for I have tested it thoroughly in nearly two hundred cases. In the brief time allotted to the discussion of subjects it will, however, be better to state conclusions and the basis for them rather than to enumerate cases. I have had under observation four diabetics who would not adhere to even a tolerably restricted diet. The administration of Clemen's solution was uniformly followed by good results. In other cases, and they have been more numerous, a strict regimè reduced the excretion of sugar to a certian point, but further improvement could not be obtained even by several weeks of perseverance. In such cases I have seen the sugar greatly diminished and in almost every instance disappear entirely from the urine under the influence of Clemen's solution. These cases seem to demonstrate the good effect of the drug. Its mode of action can not be explained.

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[10] Bunge, p. 345

[11] Bunge, p. 359.

[12] Bunge, p. 339.

Indeed, our lack of knowledge of the cause and exact pathology of diabetes makes all treatment empirical. It has been shown that arsenic lessens the glycogenic activity of the liver and it has been supposed to energize oxygenation of the blood and therefore of the tissues. Theoretical explanations of its good effects in diabetes have been based upon both of these modes of action. There is however no experimental evidence that Clemen's solution acts even in these ways. By it, not only is the quantity of sugar in the urine diminished but usually the amount of urine and urea excreted is also lessened. In a few cases of great chronicity in which there are undoubtedly anatomical changes in the kidneys such as glomerular dilatation or arterial sclerosis of the renal arteries, there will be an excessive diuresis in spite of the administration of Clemen's solution.

The following case will illustrate well the therapeutic action of the drug in a case of moderate severity and great chronicity, that was not at all perfectly relieved by treatment of other kinds or persistent dieting: A physician suffered from diabetes for seven years. During that time his urine was never free from sugar. In health his weight was 230 pounds. When he began the use of Clemen's solution he weighed 177 pounds. He was unable to walk more than two or three squares without much fatigue. At this time there was evidence of incipient pulmonary tuberculosis. January 21st, he began the use of Clemen's solution; he made that day 87 ounces of urine in the twenty-four hours of a sp. gr. of 1038, which contained 50 grains of sugar to the ounce. Therefore 4350 grains were excreted during the day. February 12th, 66 ounces were passed containing 23 grains of sugar to the ounce and having a sp. gr. of 1030. February 23d, 36 ounces with a sp. gr. of 1029 were passed containing 15 grains of sugar to the ounce. April 5th, 45 ounces of urine were made in the twenty-four hours of a sp. gr. of 1020, containing only 3 grains of sugar to the ounce. April 26th, there was not a trace of sugar in the urine. He had gained eight or ten pounds in weight. He was able to do difficult operations without especial fatigue and to attend to his practice easily. Up to this time, whenever he attempted important operations or was much worried over cases of severe illness the quantity of urine was increased and usually the amount of sugar excreted was also. No such effect was now observable. To quote his own words: "I have been a sugar factory for seven years, and now for the first time am not making any. Yet I was under treatment continually and always observed a strict diabetic diet. Lately my diet has been more promiscuous." These words were written April 29.

In the following June he suffered from a severe attack of pneumonia which left his lungs permanently crippled. In July of the following year he died of phthisis pulmonalis. There was no return of sugar in his urine after the date of the above quotation. He continued the use of Clemen's solution for two months or a little more after the glycosuria ceased.

A similar experience I have had repeatedly so that I can not but feel that the drug has some specific action upon the disease. The dose should be gradually increased to the point of toleration provided all the effect that is desired is not obtained before that point is reached, which is very frequently the case. It is best to begin with three minim doses. Five minims is well borne but in several cases when treatment was begun with this dose and the patient placed within a few days upon a diabetic diet the urine diminished rapidly in amount and the quantity of sugar excreted also rapidly lessened, but a feeling of depression, weakness and general discomfort was very marked until tolerance to treatment was obtained. I have not, however, noticed the same discomfort when treatment was begun more cautiously and we were contented with apparently slower improvement. The dose of the drug can be increased to ten or fifteen minims repeated three times daily. It is rarely necessary to give more than eight drops at a time. Occasionally unpleasant side effects are observable from doses of six or eight minims. These have been in two cases slight œdema of the eyelids and in one instance also very slight œdema about the ankles. In one case, whenever the drug was administered steadily in eight drop doses for several days a mild conjunctivitis was produced. In another instance a pharyngitis was uniformly provoked by ten minim doses if long continued. Three times I have observed nausea caused by it, but this ceased so soon as the drug was administered in a larger amount of water. A tolerance to the drug is very slowly acquired, which will make it necessary occasionally in some relapsing cases to use larger doses than had been required in previous attacks to produce desired effects. For instance, one gentleman who has been under my observation continuously for seven years has almost annually a mild relapse which is usually relieved quickly by treatment. He is careful at all times about his diet but does not find it necessary to maintain at all times a strictly diabetic one. During the last winter sugar reappeared in his urine. Its amount quickly lessened under careful regulation of diet but for four months it could not be made to disappear. He took Clemen's solution in eight minim doses which in all previous attacks had been sufficient. It did not seem judicious to increase this dose for several times disagreeable pharyngitis had been produced when slightly larger amounts were given. So soon, however, as the dose was increased and pushed up to twelve minims the glycosuria disappeared. A slight but not troublesome pharyngitis was provoked by it.

Codia and morphia are certainly useful in lessening the glycosuria and mitigating other symptoms of the disease. They can be administered interchangeably, each in its appropriate dose. The best effects are obtained from large doses given persistently for a long time. Since I have found Clemen's solution so useful I have rarely used the opiates in diabetes because they derange appetite and digestion, and when used long will sometimes cause the symptoms of chronic morphineism. In the severest cases I occasionally use them as adjuvants.

During the last year I have employed in three cases the arseniate of strychnia. The cases were not severe and in each case the glycosuria disappeared. They were all placed upon a diabetic diet. It is difficult therefore to say how much of the good effect of treatment was due to the diet and medicine.

One case was of unusual interest because of gangrene of one finger which complicated it. In July of 1892, the patient came to me with the history of a rapid loss of flesh, frequent vomiting and purging, copious urination, much thirst but no appetite. I could not obtain a sample of urine at this time and did not see him again for ten days. He was then feverish, with a quick full pulse and mentally dull. He had made very little urine for several days although there was a strong urinous odor about his person. His bladder was empty and no urinalysis could be made. He left the city at once and was not seen again by me until September. The last joint of the ring finger of the right hand was gangrenous. It was dry, hard, black and without sensibility. The rest of the finger was much swollen and very painful. He had recovered entirely from the attack of stomach and bowel trouble from which he suffered in the summer but he had not regained his flesh perfectly. His appetite was fair, not excessive and he suffered from no noticeable thirst. He urinated often, three or four times at night. On the 7th of September he made four quarts of urine. Its sp. gr. was 1030. It contained eight grains of sugar to the ounce. His diet was gradually restricted and he began the use of the arseniate of strychnia in doses of $\frac{1}{30}$ of a grain. In ten days the quantity of urine voided was diminished one-half and it contained only one and one-third grains of sugar to the ounce. On the 24th he made three pints of urine which contained no sugar. There was no longer pain or swelling in the finger though the necrosed end was still firmly adherent. Sugar reappeared in the urine about the middle of October. During the two weeks preceding its reappearance being so much improved in general health and having no glycosuria he was permitted to partake sparingly of potatoes. On the 20th, four quarts of urine was secreted of a sp. gr. 1030, containing three and one-fifth grains of sugar to the ounce. There was some glycosuria for the next two weeks. The 4th of November there was none, the necrosed tissue had sloughed off and he was feeling well. During the next six weeks there was no return of diabetic symptoms. The arseniate of strychnia did not in this or the other cases in which I have used it exhibit a decidedly controlling influence over the diabetic condition as the Clemen's solution has done in other instances.

In 1891 I began to use pancreatic preparations tentatively. The somewhat frequent involvement of the pancreas in gross lesions in diabetes suggested that possibly a fault of digestion might be at least partly the cause of the glycosuria. As pancreatic diabetes is not very common and as we do not possess evidence that a lesion of this organ is certainly the cause of the disease I had little hope of success in the trials. I used at first Fairchild's essence of pancreatin as an adjuvant in the administration of Clemen's solution. I tried it in twenty cases without noticeable effect. Such a trial is not a fair one as it is impossible to judge whether any good was accomplished by the adjuvant or whether all the results obtained came from the arsenical preparation. During the last year such good results have been obtained from the administration of thyroid extract and gland substance in myoxdema that I was stimulated to give the pancreatic preparations a better trial. I was still more incited to do this by the growing notion that the pancreas is not only an organ secreting a juice for use in the intestine, but one forming some substance which absorbed into the blood is essential to the maintenance of good nutrition. I give the essence of pancreatin in two cases without restricting the diet or using other drugs. In neither of these cases was there any improvement during the ten days of trial. There was some daily fluctuation in the percentage of sugar in the urine, its specific gravity and quantity. The general symptoms such as appetite, thirst and weakness were apparently uninfluenced. After the ten days of trial the patient's diet was gradually restricted and the pancreatin treatment was continued. The glycosuria lessened in one case steadily until the sugar disappeared; in the other a point was soon reached beyond which improvement did not take place until Clemen's solution was employed under which the glycosuria disappeared for weeks at a time, though it still returns occasionally. I have since tried powdered pancreatin in three cases but without appreciable results. In the *British Medical Journal* for January 14th, 1893, there were two articles, one by Neville Wood, the other by H. W. G. Mackenzie which gave the results of their trials of liquor pancreaticus in similar cases. In the two cases to which Dr. Mackenzie gave the drug, the feeling of well being was greatly increased, the lassitude and weakness was greatly lessened, the quantity of urine voided and the thirst were moderately diminished, but the specific gravity and the relative quantity of sugar in the urine was unchanged. Both of these patients were put upon a diabetic diet. The first of Dr. Wood's patients was advised to restrict the diet but carried out the directions very imperfectly. His general condition improved greatly, his weight increased and thirst diminished. The quantity of urine lessened one-half and excretion of sugar one-third. The second case was not dieted. Her general condition improved. She gained weight, but the thirst and the amount of sugar excreted increased while the quantity of urine voided remained about the same. This patient finally died of diabetic coma.

In more recent numbers of the same journal there are reports of a few more cases treated with pancreas or its extracts. A detailed analysis of symptoms of two cases is given by W. Hale White. His patients were dieted and simultaneously fed raw pancreas, or fluid pressed from it was administered hypodermatically. A marked diminution in the quantity of sugar excreted occurred in one case and no change in this regard was observed in the other. In neither case was there any diminution in the quantity of urine excreted or urea eliminated or in its specific gravity. Under treatment with pancreas the patients felt better and gained a few pounds in flesh. One patient was much troubled with an erythema and transitory fever while he took the raw pancreas. W. K. Sibley described a patient who improved in strength and feeling of well being while using preparations of pancreas, but the amount of urine voided, its physical characteristics and the amount of sugar it contained was unchanged. A. L. Marshall reported a case that improved upon codia. When liquor pancreaticus was administered the feeling of improvement was maintained, although the amount of urine excreted and the amount of sugar it contained and its specific gravity increased.

From these few trials and reported cases we must conclude that pancreatin preparations have no decided value in the treatment of diabetes.

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## HEADACHE.

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Headache is a symptom arising from such a variety of constitutional and local conditions, that to treat it properly it is necessary to arrive at a just estimate of the patient's standard of health. For no other symptom is it more important to carefully examine the patient as to heredity and constitutional taint. As to heredity, the inheritance may be direct, or it may be that the neuropathic parents, who may have been epileptic, or insane, or alcoholic, have transmitted to their offspring an instability of the nervous system which, instead of being of the same variety as that of the parent, has manifested itself as headache arising on various pretexts, as fatigue, worry, eye strain, etc.

Having determined the fact of inheritance in a given case, the examination of the patient requires a correct estimate of the constitutional conditions which may be present, whether the patient has been afflicted with syphilis, malaria, rheumatism, its allied condition, lithemia, or arterial disease.

A most careful inquiry should be made as to the digestion and the condition of the alimentary tract, as in the disorders of stomach and bowels we find a most common source of headache. Indigestion in its various forms and constipation are responsible for a large portion of the headaches of to-day.

An examination of the urine may reveal a diminution of excretion of urea, which often is responsible for headache. The presence of uric acid crystals, of albumen, of sugar, all indicate a line of treatment which must be followed if we would relieve the distressing symptom.

After we have determined the presence or absence of these conditions, we are prepared to study the headache itself, when our inquiry should be directed to the history of this particular symptom, the original attack—under what circumstances did it develop? Often we get valuable information on this point. The first headache may have come on when working in the sun on a hot summer's day. It may have developed after prolonged work at books, in which both brain and eyes are overtaxed. It may have followed a fall. In all cases the history of the first headache is of great value, and often suggestive of a line of treatment.

Having a history of the origin of the headache and its duration, the study of its character naturally follows. It may be continuous or intermittent. If the latter, it may occur at stated regular intervals and last a definite length of time, or it may occur at irregular intervals, each attack seemingly following a directly exciting cause, which in some cases may be an over indulgence in eating or drinking; insufficient sleep; anxiety; prolonged mental strain, or prolonged use of the eyes, which may or may not be normal.

Having established its type as to periodicity, the study of the pain and its location must be learned. As to location, it may be diffuse over the entire head, and may appear to the patient to be superficial, but it is more usually described as being deeply seated. It may be localized as frontal, vertical, occipital, or one sided.

Frontal headache we sometimes find due to a gastric cause; to anemia; to fever, and often to prolonged mental work.

Vertical pain is often due to gastric disturbance, as is also occipital.

When, however, we find headaches which are not due to altered blood states, nor to any of the causes to which I have alluded, there is still the great cause of ocular defects. This cause may be operative alone or in connection with some other, but wherever found, whatever it may be, I believe that it should be corrected. Whether the error is one of refraction or of lack of muscular balance it, in my opinion, is a cause which must be removed.

Having now thoroughly examined the headache case, how may we classify it, for upon the proper classification depends the treatment adopted.

Headaches may be either anemic or congestive, toxic, neuralgic, organic, neurasthenic or reflex.

The anemic headache is commonly found among people convalescent from disease of exhausting character; in large numbers of the poorly fed, hard worked young women in offices, shops and schools, and in the young society women of the day. It is usually of the diffuse variety, but it is often more severe in the frontal region and back of the eyes. In cases of chlorosis the pain is sometimes very intense. It is not constant, but attacks are easily brought on by exertion or prolonged reading. This latter cause probably operates by reason of the weakened condition of the muscles of the eye, which share in the general poor nutrition of the body. The diagnosis of this type is rendered easy by the accompanying symptoms, which exist in varying degree, of faintness, vertigo, palpitation, breathlessness, dizziness on rising suddenly, and improvement of the headache by lowering the head and elevating the feet.

The treatment of the anemic condition need not be described here. The treatment of the attack is often successful by giving a diffusible stimulant, as spirits ammonia arom., one drachm, to be repeated if necessary in one-half hour. Sulphate of quinia in five or ten grain dose often is effectual in arresting the pain or at least in moderating it.

The congestive headache affects the whole head. It occurs often in school children. It is rarely due to overwork—more often to gastric and intestinal causes. The pain is throbbing, increased after meals, and is usually worse in the latter part of the day. Sleep is often tardy, and when it does come it is often disturbed by bad dreams. The patients are as a rule all children of neuropathic ancestry, and are liable to suffer from other diseases, as epilepsy and chorea. As a rule they are dull at school, or else bright in some things, dull in others, irritable on the play ground and changeable in their moods. Such patients, it should be remembered, are always in danger. It is possible that these headaches, in a limited number of cases, may be forerunners of more serious mischief—tubercular meningitis. These children should be taken out of school and the entire attention be given to making good active physical beings, not intellectual prodigies of them. They should be given a system which they are to carry out most religiously. This should include mild gymnastics, cold sponging, salt water rubbing, outdoor plays, but particular care must be taken that the child does not become exhausted, and to that end I make it a rule to order that the child come in at four o'clock and rest an hour. In many cases we find such cases are best treated by the mixed bromides, five to ten grains, t. i. d., for a few days only.

Regulation of the diet, which should include avoidance of sweets, prevention of over eating, the giving of fruits, and attention to the bowels, should complete a cure.

In adults, congestive headaches more frequently occur in men and are often due to frequent wining and dining. The head pain is described as being a feeling of fullness, a throbbing, beating head. The treatment by blue pill and salts, with dietary restrictions, is effectual in curtailing the duration of the attack. A full dose of bromide of potash, or of one of the effervescent salts of caffein or antipyrin often relieves the pain. The English gentleman prescribes for himself on such occasions the juice of half a lemon in a glass of apollinaris water.

There is also the congestive headache due to prolonged brain work. It is perhaps needless for me to remind you that when an organ is functionating it requires more blood than when at rest, and that after prolonged mental work there sometimes is a passive cerebral congestion. This is seen in lecturers, ministers, jury lawyers, and students cramming for examinations. It is usually accompanied with restlessness, general fatigue and insomnia. The patients complain of a feeling of pressure on top of the head. There is also dizziness, ringing in the ears, and photophobia. If these attacks are frequent there gradually develops a capillary dilation, due to the frequent active hyperemia, and then a chronic congestion may occur, and we then have a chronic headache most difficult to cure. These headaches are made worse by the worker taking stimulants as a spur to the flagging energy.

My treatment of these cases is, cessation of work where possible; first thing in the morning before rising, a cup of black coffee; a spinal douche, 40 degrees, at ten or eleven o'clock

℞. Tinct. nucis vom 1 oz..
Elix. gent., 2 oz.
Acid. phos. dil., 1 oz.
Elix. pepsin, 2 oz.
Sig: A teaspoonful in water three times a day.

If the heart is flagging, give a little digitalis. At night I have them take a sponge bath with cold salt water before retiring, well rubbed, in order to stimulate the peripheral circulation, and deplete if possible the engorged cerebral circulation. If, after being in bed one hour they do not sleep, I give

Ergot, m. xxx.
Pot. brom. gr., xxx to lx.

In the congestive headache of old people I have had some good results from continued small doses of ergot. In some chronic cases which have yielded to no other treatment, potassium iodid in 15 to 20 grains a day relieves the severity of the pain.

In the headache occurring at the menstrual period in which the pain is frontal, extending from the root of the nose over the eyes to the temples, Dr. Glasgow of St Louis, reports that in a number of cases he has given immediate relief by pricking the congested cavernous bodies, and thus causing free local blood letting. This I have never tried, as it requires some manual dexterity which I do not possess.

The syphilitic headache is marked by great violence. The pain is usually vertical and may be diffuse or localized. Its characteristic accompaniment of scalp tenderness and nocturnal increase of pain make the diagnosis sure enough to warrant questioning the patient as to his personal history, and to treat him antisyphilitically, even though we meet with a denial of specific disease.

I have not found as prompt results with small doses of mercury in these cases as I have with doses of potass. iodid of from 15 to 20 grains three times a day. This may be due to the fact that the majority of my cases have had the headache as a late symptom.

The headache due to cerebral growth, the toxic headache, arising from the use of drugs, the headache occurring in the course of acute febrile diseases, of which typhoid fever and la grippe are examples, the headaches which occur in rheumatic, gouty and lithemic subjects form a group, the treatment of which is a part of the treatment of the disease of which it is a symptom, and will not therefore receive special consideration here.

The headache due to reflex causes, chief of which is some eye defect, are to the general practitioner of the most baffling character. This is so because, even though the patient is asked if there is any trouble noticed in using the eyes, we often are answered: "No, my eyes are perfectly strong. I can see perfectly." An examination with the test type, which is the only way we who are not oculists have of examining the eyes, often reveals what we estimate as normal, or near enough to normal vision, and then we dismiss the eye question from the case. Or perhaps the patient may be wearing glasses, and will mention the name of some well known oculist who fitted the glasses, and pronounced them correct. The general practitioner must indeed be bold who will persist in clinging to the idea that there is still an unsolved ocular problem. But my experience with rather a large number of patients of this class has forced me to the conclusion that oculists may differ in their mathematical calculations as surely as we will differ in our prescriptions for disease. It is not uncommon to have a patient examined by two different competent men, and receive different glasses from them. This, I believe, is not always because the measurements taken differ, but because oculists differ as to the advisability of giving full correction or only a partial correction. What may be the correct view to be taken in case of fitting glasses for correcting defective vision unaccompanied by nervous symptoms, it is not within my province to say, but in those cases in which the defective eyes are accompanied by headache, I am convinced that in the very large proportion of chronic cases the error must be fully corrected, and corrected after the use of a midriatic before we can eliminate the eyes from the case.

In reference to the cases in whom we find loss of muscular balance, we must wait for the decision of the oculist as to the relative value of tenotomies and prisms.

In the cases due to ocular defects which have existed for a long time, the patients will as a rule require treatment for a considerable time after the proper correction has been made.

After a careful study of all headache cases, there still remains a considerable number in whom we can find no ascertainable cause, and where we meet with but little success in treatment. It is these cases that give the general impression that headaches cannot be cured but must be endured. It is also in these cases that we must avoid recourse to the hypodermic or other use of morphia, for they become habitues only too easily.

Leaving out those cases in whom we can find no definite cause, I believe that by careful study of individual cases a large majority can be greatly improved, if not cured.

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Dr. J. T. Whittaker, Cincinnati, O.—We all of us come to a time when we suffer from eye strain; when we reach 45 we all have to use glasses, as a rule. In only the minority of us who suffer from headaches it has seemed to me the fatigued condition of eye strain and headaches which it has excited is always corrected by glasses. It is the experience of the majority that glasses do not correct the headache. Besides the infective diseases the headaches in adult life, especially male adult life, should suggest to us first, Bright's disease; a persistent headache is nearly always accompanied by increase of urine, and we are often led aside because we fail to find albumen in the urine. We should take the specific gravity and observe in this it is very light; then when we have the urine measured we find it has increased. So far as syphilis is concerned, there are very few cases attended with headaches. There is a disease associated with syphilis accompanied by exaggerated headache, and I have risen to see if my experience coincides with my colleagues. Gonorrhœa is attended with headache, especially that kind which attacks the posterior urethra, which is very frequently entirely independent of any scars; where the gonococcus produces restlessness, insomnia, jactitation, and above all an exaggerated headache. These cases are by no means uncommon; they often pass without diagnosis, especially where the history is denied, but on microscopical examination you can discover the so-called gonorrhœal threads that are passed in the first urine in the morning. These cases are not relieved by any ordinary treatment of gonorrhœa, or any ordinary injections. They require topical treatment by the catheter which reaches the prostate gland with the nitrate of silver. First a 2 per cent. solution, and increased gradually to 10 per cent. That relieves the jactitation and restlessness of the nerves, restores the vitality and relieves the exaggerated headache.

Dr. Jas. W. Putnam, Buffalo, N. Y.—I have only one word to say. I am glad the doctor who has just discussed this paper agrees with me that after you have fitted the glasses properly to the eyes we find then the case is not cured; the treatment must go on afterwards. The treatment of headache following gonorrhœa is new to me; I have never met with it.

# AN ADDITIONAL NOTE ON THE USE OF STROPHANTHUS IN THE TREATMENT OF EXOPHTHALMIC GOITRE.

Read before the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

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At the meeting of the New York State Medical Association on October 23, 1890, I gave my experience with the use of strophanthus in eight cases of Graves' disease. The paper was printed in The Journal of the American Medical Association in Vol. xv, No. 21, 1890, page 785.

Previous to writing that paper only two or three references to the use of strophanthus in this disease had been seen by the writer in current medical literature, and since that time the year books and journal articles recommend other therapeutical measures as a rule—rarely referring to this recent addition to our materia medica. While my own use of the drug in this particular disease antedated by more than a year any reference to it in the medical literature, still it had been recommended before the publication of my cases, so that I have no claim to originality or even priority to maintain, and only write this brief note to call attention again to its usefulness.

Since the instances of the disease noted in the paper referred to, I have not kept a detailed record of the cases coming under my observation, but I have probably had fifteen or twenty additional cases in which strophanthus has been used. In all of these an improvement has resulted, though the degree of amelioration of the symptoms has varied. In one, a young woman 22 years of age, who had exophthalmos in what might be termed a hideous degree, and was incapacitated for even moderate exercise by the tachycardia, the pulse rate being even at rest from 160 to 180, I was unable to reduce the pulse below 110 or 120; but though in appearance she is not notably improved by the treatment, she is quite gratified with the results, for she is able to attend to household duties and travel for pleasure, even enduring without inconvenience several days of shopping in an occasional visit to New York city.

So far as I have been able to follow the cases related in my first paper, the improvement has continued. There was no instance of a relapse, though some have been obliged to continue the use of the drug the greater portion of the time. The first case related in my former paper, that of a woman now over 60 years of age, and who was an extreme sufferer from the disease, has been able to keep herself in a condition for active exercise by the nearly continuous use of strophanthus.

The fact that the tachycardia is often the earliest manifestation of the disease has enabled me in two instances to suspect the approaching development of the exophthalmos and the goitre, and so bring the patient under the influence of the drug before notable deformity had occurred in relation to the eyes and the neck, though there was sufficient change to justify the diagnosis before the tachycardia was relieved.

It is not my wish or intention to urge strophanthus as a specific in Basedow's disease, for while my own experience has uniformly given favorable results, it is manifest that this complex of symptoms may be associated with irremediable changes in the nerve centers, or there may be conditions more favorably influenced by other drugs or measures. Many cases benefited by strophanthus may need additional therapeutical agents, and in several I have felt the necessity for the administration of iron, arsenic and strychnin. It has seemed to me that belladonna would prove of value in some cases, and next to strophanthus I should regard it as our most valuable agent. It has not been my fortune to observe favorable results from electricity, but the fact that some of the cases are mild and tend to a favorable termination should be taken into consideration in forming our conclusions. I am satisfied that this favorable course in some cases has been the result of the natural tendencies of the disease, rather than any effect of therapeutical measures. In my early use of strophanthus I endeavored to protect my conclusions from error in that direction by limiting its use, not only to undoubted cases of the disease, but it so happened that the early trials were made in severe cases.

If the individual case is favorably influenced it will then be wise to inform the patient of the probable necessity for a prolonged use of the agent, for though a few months often seem sufficient in some cases, others may require its use for an indefinite number of years.

The question of dosage is one of considerable importance, for it varies greatly in individual cases. When strophanthus was first introduced by Frazier its dose was given at from four to seven drops of the tincture, but it was soon manifest that either the individual specimens of the drug differed greatly in potency, or personal susceptibility was an important factor. It is true that from five to ten drops will occasionally give notable results, but my own experience has shown that much larger doses are often required. My present plan is to have the patient secure a sufficient quantity of the tincture to obviate the necessity for frequent changes of the preparation, and then to begin with eight to ten drops at each of the three daily meals, using always the same dropper. After a week, if no benefit results, this dose is increased by one or two drops, and in this way continued and increased until its beneficial results are obtained or until there is evidence of injurious effects, though so far I have not been obliged to cease from its use on account of toxic symptoms. Injurious or unpleasant effects will furnish indications relative to its continuance or the dosage.

In this way I have increased the dosage to fifty drops three times daily—an amount found by actual measurements to be about thirty-five minims—before relief was experienced, and this large dosage has been continued for several months, not only without unpleasant effects, but with great relief.

It seems the part of wisdom to have the patient purchase the drug in considerable quantity at each time, thus obviating the necessity for frequent changes in preparations, and when taking large doses it may be well to take somewhat less than the maximum dose when a new specimen is procured, for it is a clinical fact that the activity of the preparations is not uniform.

Dr. Hobart A. Hare, Philadelphia, Pa.—The observation of so many cases of what I consider, from a fairly large experience in hospital practice to be a rather rare disease, enables Dr. Ferguson to make much more authoritative statements than most of us can make in this affection. I do not know the percentage of this disease because I have not had the opportunity of studying the subject recently, but I am sure even fifteen cases within a short time is a rich experience in this trouble. I have one hundred and forty beds under my care six months in the year in a large hospital and see from 300 to 400 cases a day in dispensary work, and during the last four or five years I have never seen more than two cases of true Graves' disease. I have seen a number of cases of that condition known as paroxysmal tachycardia, and when I make the distinction between true Graves' disease and tachycardia I mean that all the typical and physical signs of Graves' disease have *not* appeared more than a few times in this large number of cases. I have used strophanthus I think as faithfully as possible to use it, and have never seen it do any good whatever. I have a case under me who has taken strophanthus in all sorts of conditions until it has come to be the talk in the patient's family, how many changes is that doctor going to make? I have used a combination of remedies, such as belladonna with a little digitalis and sometimes a little nitroglycerin added to the prescription Dr. Ferguson has *not* mentioned a symptom which I hardly believe he could have failed to meet with from these large doses of strophanthus; that is, a troublesome diarrhœa which usually comes on at the end of the third or fourth day when you are giving moderately large doses of this drug. I have a case in mind in which the administration of five drops of strophanthus produced so much valve trouble at the end of a few days that the drug had *to* be stopped although it was doing good in the cardiac disease which was not benefited by digitalis.

Dr. W. E. Quine, Chicago—There are few diseases, that tax the therapeutic resources of the medical practitioner more than the one under discussion, and I imagine also that there are few medical practitioners of experience in the management of this disease who have not had occasion to resort to the employment of strophanthus. I have used this medicine in a goodly number of cases in varying doses and states of combinations, and with varying results. Examples of Graves' disease have been under my observation and care in which strophanthus proved to be a sovereign remedy and in which improvement in the condition of the patient began with the administration of that agent and continued until established amelioration, a little less than absolute cure in the majority of instances and in some instances advanced to the point of absolute cure. I have never administered strophanthus with as free a hand as has been done by the essayist. I have noticed, as others must have noticed, the symptom already referred to as resulting from the excessive freedom of use of this agent, namely, relaxation of the bowels. I have also been annoyed in a goodly number of instances by the irritability of the stomach and its intolerance of this agent as other agents of the same general class. It has been uncommon for me to encounter cases of exophthalmic goitre in which it was possible to administer strophanthus as freely as has been described by the essayist. Some reference has been made by one of the gentlemen in the discussion to the comparative infrequency of pure Graves' disease in his own experience and the relative frequency of tachycardia. I have long since reached the conclusion that the derangement of the heart which goes familiarly by the name of tachycardia is in the majority of instances but cases of immature or imperfectly developed Graves disease. Tachycardia may be and often is the primary symptom; it may exist for months or years before the enlargement of the thyroid, or any of the nervous phenomena have had time to develop; it may be the only symptom to attract attention for a considerable period of time. Belladonna has been in my hands a capricious and uncertain remedy; it has been useful in a small number of instances but I have derived quite as much satisfaction from the administration of medicines of the general sedative class whose ordinary effect is that of lessening reflex instability, such as gelsemium and canabus indica.

Dr. J. M. Anders, Philadelphia—My experience coincides with that of Dr. Hare, so far as the use of strophanthus is concerned in typical cases. In those cases the best results are obtained in the use of digitalis and other remedies that are certain to slow the action of the heart. There is, however, one class of cases in which the combination of strophanthus and digitalis has had most admirable results, that is in arythmia. There can no longer be any question that strophanthus regulates the contractions of the heart better and overcomes arythmia better than digitalis alone, no matter how large the dose of digitalis that may be employed. Strophanthus alone will not do this to the same extent as when combined with digitalis; it has long been my practice to combine strophanthus and digitalis when there is marked arythmia.

Dr. E. D. Ferguson, Troy, N. Y., in closing the discussion, said: My paper did not intend to exhaust the treatment of exophthalmic goitre; it simply referred to the use of one drug, and I indicated that it was not a specific, although proved to be useful. So far as a genuine cure of exophthalmic goitre is concerned, relief of the symptoms relating to the pulse and to the anatomical condition of the neck and the eyes, I have never seen a cure, and so far as our present therapeutical resources are concerned I don't expect to see a cure, but patients have been improved and comparatively relieved of the dyspnœa, particularly upon exercise.

In regard to the preparations of strophanthus, in my article I called attention to a considerable difference in the preparations—that there seemed to be some material in it of an intensely bitter taste, in some instances of a balsamic nature when separated by putting the alcohol solution into water that was quite disagreeable, would disturb the stomach and also the bowels. I have seen the effect upon the bowels and heart which has been referred to, but by changing the preparation have been able to right them.

In regard to the frequency with which we see these things, it is a fact that diseases often hunt in couples, in triplets and in platoons. In my first paper I related a case where I was called to a patient and when I gave my diagnosis the doctor was frank enough to say he did not know what it was, had never heard of it and never seen it before. In a few weeks he brought another case to me, the second he had met after practicing thirty or forty years. I had seen the disease occasionally up to the time of that paper and since then I have seen it more frequently, possibly because some of my professional brethren have brought the cases to me. Whether the locality has anything to do with the development of this trouble, as it has with simple goitre, is a question. I agree with the gentleman that in many cases of tachycardia it is masked, similar probably to what would amount to a genuine case of exophthalmic goitre if allowed to go on.

In regard to the use of strophanthus and digitalis, I do not regard strophanthus as a specific, but if it is of use it would seem to me that digitalis cannot be of use. I am aware that we cannot place too much confidence in the varying effect of drugs, but if the tincture of strophanthus lessens the heart's action and digitalis while lessening the action of the heart increases the tension we have two different effects.

All my cases were fully developed exophthalmic goitre; there was not only the tachycardia but the enlarged thyroid body and protrusion of the eyeballs, the dyspnœa on exercise and the general nervous symptoms that go with this trouble.

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**Bad Water for Soldiers.**—About a hundred members of the Second Regiment, New Jersey militia, encamped at Sea Girt, were recently taken ill with vomiting and purging soon after their arrival in camp. In nine cases the attack was so severe that a fatal result was feared, but all fortunately recovered. The cause of the illness for a time was shrouded in mystery, but an examination by the State chemist of the water taken by the soldiers proved it to be contaminated with surface drainage; the driven wells from which they drank being only fourteen feet deep.

# DIPHTHERIA.

Read before the Section on Practice of Medicine at the Forty-fourth Annual Meeting of the American Medical Association.

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Diphtheria is an acute infectious disease, highly contagious and dependent upon a specific virus for its inception and propagation. Usually beginning by an involvement of the throat, characterized by exudations locally, and enlargement of the lymphatic glands, soon to be followed by a general systemic poisoning, attended with various paralyses as sequelæ.

At first seemingly a local disease, caused by an inoculation it soon becomes general and assumes a constitutional form of a most virulent character, constituting one of the most dreaded diseases of childhood, from the frequency of its prevalence, as well as the great fatality that attends it. While it does affect the general system finally, yet primarily it is locally characterized by affecting especially the mucous surfaces of the throat though not necessarily confined to these parts, as it may affect the mucous surfaces elsewhere and even the skin.

Locally, its chief manifestation is the formation of a grayish white film or pellicle upon the mucous surfaces and upon the skin when deprived of its protecting epithelium. Usually the virus of the disease is conveyed through the inspiration of the infected air, but occasionally it is communicated by direct contact of the infecting material with a mucous surface.

The history of diphtheria is interesting as well as instructive, and shows that the marked features of a disease will identify it in spite of a difference in the names assigned to it. From the investigations made of its prevalence, the conclusion is that diphtheria is not a new disease but has prevailed with more or less fatality in the remote ages of the world. Certainly it is a disease of antiquity. The name diphtheria was first applied to the disease by Bretonneau of Tours, in 1824. He called it diphtheria from the supposed resemblance of the exudations to leather or parchment. Notwithstanding the fact that this name was applied at so recent a date yet from the descriptions given by ancient writers of a disease (and epidemics of that disease) affecting the throat and prevailing chiefly among children we conclude, from the similarity of the symptoms presented, the class of patients attacked and the fatality attending it, that it was identical with diphtheria of the present day, as we meet with it. An account is given of a malignant sore throat (and even of laryngotomy being performed to relieve suffocation) before the Christian era.

Again, in the early centuries of the Christian era we have some graphic descriptions of a putrid sore throat, the disease sometimes extending into the windpipe and producing death by suffocation.

From the close of the fifth century until the sixteenth the record of diphtheria is broken. It is probable that during the long period embraced in the dark ages, every decade witnessed epidemics of this fatal disease, but if they were observed and recorded the records were lost, the literature of diphtheria sharing the fate of the general literature during this time of intellectual darkness.

Since the sixteenth century medical literature has contained many essays descriptive of epidemics of an angina whose features tallied well with diphtheria of the present day, so much so that we cannot doubt but that it is the same disease. At different periods and in different countries diphtheria has received different appellations expressive of the leading features of the disease. Introduced into America by adventurers from the old world, diphtheria has prevailed more or less to the present time, with increasing frequency and fatality and has become one of the scourges of our country, no infantile disease being looked upon with more dread than diphtheria. So far as we are informed the natives of America, "the red men of the forest," were not afflicted with any disease except such as were due to climates, seasons and their own indiscretions.

Epidemics of contagious diseases were unknown in this country until the white man put his foot upon the soil and planted the banner of civilization. Cortez and his men in their greedy thirst for gold introduced the small-pox into Mexico. Sailors under Columbus brought the diseases of vice and immorality into America. And in the sixteenth century diphtheria was landed, first manifesting itself at Boston and now "it is to be from appearance above all other maladies, the scourge of America in the future." As the line of civilization advances the physical man deteriorates and with the increase of population there is an increase of epidemics of contagious diseases. Bretonneau investigated the disease extensively in 1821 and with him originated the name of diphtheria. Since then quite a number of eminent medical men have studied and investigated the nature and character of diphtheria. Within the last fifty years diphtheria has prevailed extensively in all parts of America as an epidemic and in some localities as an endemic disease, so much so as to be pretty well domiciled.

It prevails in all sections of the country, in the crowded cities and in the sparsely settled country. Epidemics of the disease have swept over thinly inhabited parts of the country with fatal effects and likewise they have raged in crowded cities with frightful mortality. But it prevails more frequently and with a greater fatality in cities, especially the larger ones. In some of our larger cities the disease has become endemic. The etiology of diphtheria presents an interesting and much disputed question for our consideration. For a great many years past a close investigation of the disease has been carried on and quite a number of experiments have been made upon the lower animals with the endeavor to determine the precise cause of diphtheria.

Its specific cause has been denied by many and for awhile it was considered by some to be due to the same cause as that of scarlet fever. But more recently it has been conceded to be dependent upon a specific, infecting virus. Yet the profession were at a loss to know what this specific cause or virus was. Pathologists labored earnestly to discover the especial cause of the disease, numerous observations were made and many experiments carried on.

In 1868 Oertel discovered micrococci in the pseudo membrane of diphtheria, in the blood and lymphatic vessels and kidneys in severe diphtheria, appearing as "point like, dark contoured round or oval little bodies, isolated and in zooglea." In later investigations (in 1874) he found a larger or smaller number of the bacteria termo accompanying the micrococcus and he expressed more firmly the belief that a bacillus lodging on the mucous surface caused the diphtheritic inflammation. But later observations tend to show that the micrococcus of Oertel does not differ from those found in putrescent animal matter. Later, Kleb discovered a microbe which he claimed to be the cause of diphtheria and his observation was afterwards confirmed by Loeffler. The theory which is generally acknowledged by the profession as correct is that diphtheria is caused by a microbe or microbes; that their action is chiefly on the surface and that the blood poisoning or toxemia which is the cause of the malignancy of the disease is the result of the absorption into the system of the products of the decomposition which takes place at the point of infection; that it is the result of the action of the ptomaines on the blood of the patient and that the ptomaines are the products of a micro-organism. The conclusion, then, is that diphtheria is a specific contagious disease and that the constitutional infection is the result of ptomaines produced by microörganisms. Diphtheria does not arise spontaneously, nor does it develop *de novo*, but is produced by a particular cause, a specific virus and that specific virus is a microbe.

The contagiousness of diphtheria is a well observed fact; it is communicated from one person to another as other contagious diseases are, and especially by direct contact. The nature of the disease is such that while it is no respecter of persons, but prevails among the wealthy and refined with as much virulence as among the poor and uncultured, yet the greater prevalence of the disease and the violence of the symptoms in unsanitary localities and conditions are such as to cause it to be classed with the filth diseases.

Whilst it does at times prevail with great fatality in sparsely peopled districts as well as in those that are densely inhabited, yet there is a marked increase in its progress in the groups of cities and towns of our country. Diphtheria is becoming more and more a disease affecting our large centers of population, and less prevalent throughout the country districts.

The disease is fostered and rendered more fatal in its attacks in locations where dampness exists, subject to cold wet winds and where the surface soil is such as favors the retention of moisture and where there is an accumulation of refuse organic matter. Seasons have a marked influence on the prevalence of diphtheria as well as upon its mortality. It is a disease of cold weather and prevails most usually in the fall and winter. The greatest number of epidemics prevail in the fall of the year; the greatest prevalence of the disease is from September to February.

Sex exercises but little influence on its prevalence; there is more excess of attacks in girls than in boys, perhaps because they are more frequently brought in contact with the sick. Age has a decided influence over the incidence of diphtheria. The greatest number of cases by far, both fatal and non-fatal, occur between the ages of three and twelve years. It is preëminently a disease of childhood, yet strange to say it very rarely occurs in a nursing babe.

The prevalence of diphtheria is associated with the prevalence of ill-defined sore throat during its existence from the commencement, during its continuance and after its cessation; and as a consequence many deaths from diphtheria are not recognized but are attributed to croup, laryngitis, etc.

In some instances the prevalence of sore throats progressively develops the property of infectiousness which culminates in a definite, specific type of diphtheria. Diphtheria usually begins as a local disease showing itself first at the point of infection, *i. e.*, where the contagion has been received, whether through the atmosphere or other agents, and an unhealthy condition of the tonsils and surrounding tissues (to whatever cause due) operates strongly as a predisposing cause to an attack when diphtheria is prevalent. Assemblies, especially schools where children are aggregated together tend to increase the number of cases and favor the spread of the disease. Particularly is this true when preceded by a number of cases of sore throat. Diphtheria has been conveyed to distant places by clothing; being carried by means of the exudation. There is a number of instances of the disease being conveyed by means of milk, and in some instances there was strong evidence that the infection was due to the diseased condition of the cow. The direct cause of diphtheria is a microörganism, the bacillus, diphtheriæ, which has been cultivated and is capable by inoculation of conveying the disease to others and also to many of the inferior animals.

The period of incubation in diphtheria is rather short, more so than that of the majority of infectious diseases. It is usually from two to five days, sometimes longer, but rarely, if ever, longer than eight days. The symptoms manifested by diphtheria are characteristic of the disease and are generally well marked. However, in some instances they are so obscured that they are overlooked by the family and even by the medical attendant.

The disease varies greatly in severity; from a very mild attack to the most malignant form of the disease that perhaps we ever have to cope with. I have seen cases so mild that the little patient was scarcely sick enough to be confined to the house, and again I have seen cases so violent from the very outset of the disease that the system was soon overpowered by the poison and in a few days life was extinct. In general it is said by authors that at the commencement of an epidemic the symptoms are more severe than at its decline. In my observation the severity of the disease is the greatest at the height of the epidemic. The cases are milder at the beginning and at the decline of an epidemic and this holds good in all epidemics.

Usually the symptoms of a commencing diphtheria are slight. The patient complains (or shows signs) of languor, lassitude, headache, chilliness, succeeded by a fever, aching in the limbs, thirst, anorexia and sore throat, as evidenced by pain on swallowing. Small children cannot tell their complaints, but the mother notices they are not well; that they fret while nursing, and the expression of the child indicates that it does not feel well. In mild attacks the child may not be in bed and sometimes children with diphtheria run outdoors with other children and thus convey the disease to others. The sore throat may be so slight that very young children may manifest very little if any dysphagia and older ones may not complain.

It is a good plan to examine the throats of all the children under our charge when diphtheria is prevailing and at all times when ill-defined general symptoms are presented. From a neglect of this precaution we sometimes overlook diphtheria until the case is far advanced. A few years ago I was called to see a little boy whose case the attending physician had diagnosed to be only simple croup. There was a difficulty of breathing with a beginning cyanosis. Upon exposing the throat the characteristic exudation was plainly seen upon the tonsils. The mother who stood behind me when she saw into his throat, uttered a piercing scream, and ran from the room exclaiming, It is diphtheria. In less than twenty-four hours the child was a corpse.

In the initial stage of diphtheria the general symptoms so closely resemble those of a bad cold that the disease is liable to be mistaken for it unless there is had an inspection of the throat. In the beginning there is a redness of the soft palate and fauces with swelling of the tonsils, and upon their inner surface are spots covered with a grayish white coating which is quite firmly adherent to the mucous membrane and these will likely be found also upon the soft palate and uvula. These patches may not be observed at the first examination but will be quite evident in a few hours. This is the exudation of diphtheria and may appear as points which sooner or later coalesce, forming a patch or pellicle which becomes thicker and firmer.

In the severer forms of the disease the attack begins abruptly and its symptoms are well pronounced from the commencement. There is a decided fever, with general malaise, thirst, loss of appetite and sore throat, possibly delirium and convulsions, but usually the mind remains clear throughout the attack. The temperature rises to 102°, 103°, or 104° Fah. rarely above this. In my observation a very high temperature is not a characteristic of diphtheria, nor is it apt to continue high long; after the third or fourth day the temperature is but slight. The diphtheritic poison when fully disseminated throughout the system does not tend to markedly increase the animal heat, but so overpowers the nerve centers as to prevent reaction, and when the toxemia is profound there is scarcely any elevation of the temperature; sometimes it is subnormal.

In diphtheria a very high temperature long continued indicates some inflammatory complication. Ordinarily the thermometer is of but little service to us in diphtheria as the amount of fever does not bear any relation to the extent of blood poisoning. A severe attack of diphtheria with great malignancy, rapidly tending to a fatal termination may have a temperature but little above the normal while a mild case may present a comparatively high temperature. A continued high temperature in a case of diphtheria rather indicates some inflammatory action going on than the degree of blood poisoning. But the thermometer is of value inasmuch as it enables us to form some idea of the extent and severity of the complicating inflammation that may be present, whether it be a pharyngitis, tonsilitis, laryngitis, bronchitis, pneumonia or a nephritis or any constitutional disease that may exist as a complication. The pulse in diphtheria is usually feeble and frequent, often very rapid and small. The more malignant the attack the greater will be the feebleness and frequency of the pulse. In slight attacks ordinarily neither the local affection nor the constitutional symptoms are at all violent, but maintain a moderate degree of severity for a week or ten days when they decline and a steady convalescence sets in. In the malignant type of diphtheria, however, from the beginning or early in the course of the disease, dangerous symptoms are evident and the child's life is in great jeopardy, either from the exudation extending to the neighboring organs or from the development of a deep constitutional infection. The exudation extends into the nares and this is usually a grave sign, not that the infection of the mucous membrane of the nose itself is so dangerous but it affords opportunity for a deep poisoning of the general system that will be severe and prolonged. The inflammation of the Schneiderian membrane may be simply purulent but usually it is croupous and attended with exudations and these sometimes extend outward and cover the excoriated lip. The involvement of the nares is generally secondary to that of the pharynx, yet it may be primary. As the disease advances the swelling of the nasal mucous membrane increases and the breathing is accompanied with a whistling sound, a snuffling; finally the nostrils are occluded and the child breathes only through the mouth; whilst at the same time the glands at the angle of the jaw become inflamed and enlarged.

The extension of the disease into the nares is a source of great danger, for the great number of lymphatic vessels in the connective tissue in and around the nose tend to increase the absorption of the virus and the infection of the system and it also begets a tendency to hemorrhage, which is often profuse and exhausting. Occasionally the disease extends through the Eustachian tubes to the ear producing great pain and impairing the hearing. In some instances it has produced inflammation of the internal ear with the rupture of the tympanum and necrosis of the bones. The eye is also subject to invasion, either through the nasal duct or by direct contact. The exudation may also extend to all parts of the mouth, the tongue, gums and lips—very rarely it involves the esophagus. But the most dangerous implication of all is the extension of the exudation into the larynx, where it creates a mechanical obstruction to the respiration and may produce suffocation. The extension of the exudation into the larynx is characterized by a hoarseness of the voice, croupy cough, difficult and laborious respiration, while the face becomes pale and livid and the lips cyanotic. Possibly the membrane may become loose and be coughed up and the child relieved, but unhappily this is an unexpected termination for most usually the stenosis increases, respiration becomes superficial and more frequent, the pulse feebler and very rapid, stupor ensues and death closes the scene.

Heart failure, the result of the overwhelming of the nerve centers by the poison of the disease is often the cause of death. The kidneys are very frequently implicated in nearly all the severe cases; albuminuria to a greater or less extent is present. Paralysis is a complication of diphtheria, occurring usually as a sequelæ. It most generally affects the throat and materially interferes with deglutition and the voice; occasionally the muscles of the trunk and extremities are paralyzed. The prognosis in diphtheria is not very favorable and at all times is uncertain. The robust and healthy children succumb to the disease as well as the feeble and unhealthy. Many cases of a severe type get well while some mild cases terminate fatally. Therefore we are to be guarded in our prognosis; still under good hygienic management and skillful treatment a fair proportion of cases get well, but diphtheria is to be regarded as a formidable disease attended with a large mortality. The course and termination of a case of diphtheria is uncertain and deceptive. Death may be the result of the poisoning of the blood by a specific virus of the disease or its ptomaines, of septicemia, diphtheretic croup, heart failure, or congestion of the lungs with œdema. The unfavorable symptoms are extensive deposits of exudations, anorexia with nausea, paleness of the surfaces, decided prostration, albuminuria, hemorrhage of the nose, extension of the deposit into the larynx.

In the treatment of diphtheria quite a variety of remedies have been suggested and many different plans proposed, for which great success is claimed. But in my own experience there are but few remedies that are of much avail and certainly none that are specific.

Although the treatment of diphtheria is not very satisfactory and in the hands of the most skilled many patients die, yet with a well formulated plan of treatment faithfully carried out we can hope for gratifying results.

The prevention of the development and spread of the disease is of the utmost importance. Being eminently contagious (in a small area) with a tendency to rapidly spread, the necessity for isolation is absolute and second to isolation is disinfection. Isolation and disinfection constitute the preventive treatment. In the treatment of the disease there are certain general principles by which we are to be guided and we cannot rely upon any particular medicine to cure the disease. The indications for treatment are to destroy or neutralize the local infection, to limit the exudation, the prevent the absorption of septic matter, to loosen and remove the membranous exudation, to prevent the disintegration of the blood, to disinfect and cleanse the diseased parts, to support the patient and to secure ample ventilation and the utmost cleanliness. The treatment of a mild case consists in regulating the secretions, the use of an antiseptic mouth wash, such as a weak solution of carbolic acid, bichloride of mercury, boracic acid or the chloride of sodium and an occasional touching the points of exudation with some stimulating antiseptic, (not an escharotic). The following has served my purpose well:

Recipe:—Acidi carbolici, gtt. x; tinct. iodini, tinct. ferri persulphatis aa, gtt. xx; glycerini qs ad 1 oz. M—Sig.: Apply daily. For the relief of the inflammation surrounding the exudation astringent gargles are used, and frequent swallowing of lumps of ice. Pepsin, lactic acid, trypsin, papoyatin are used for solvents of the membrane and as the membrane loosens or comes away the parts should be thoroughly disinfected with a solution of carbolic acid or mercurial chloride and this is best done by an atomizer. The general treatment will be best directed by keeping the patient quiet in bed, ordering a nutritious and easily digested fluid diet. To improve the condition of the blood, iron with a bitter tonic is given; to destroy or stay the destructive effect of the poisonous tox albumins the bichloride or mild chloride of mercury is given in small and frequently repeated doses. Later on, the muriated tincture of iron with muriatic acid and chlorate of potash is substituted for the mercuric. At the first indication of increasing weakness the alcoholic stimulants are given; the best of these is good whisky—the wines are not active enough. The whisky must be given in large and frequent doses. Where the prostration is very great, French brandy should be substituted for whisky.

If the disease extends into the larynx and the stenosis is such as to threaten suffocation, tracheotomy is the only remedy that offers any hope. The operation is indicated by the persistent obstruction of the larynx. The operation will fail of success if the exudation has already extended into the bronchi, or the system is overwhelmed by the infection, and incipient paralysis of the heart exists. The result of tracheotomy in this condition is not very encouraging, but it is a forlorn hope and should be done.

DR. JENKS, Keokuk, Iowa—The majority of the profession agree with the doctor in believing that diphtheria is a disease which is primarily local. In a majority of cases the germ finds lodgment in suitable soil in the tonsil; from there it excites inflammation and probably the toxalbumin is absorbed. I wish to emphasize the importance of local treatment. The first thing I do when called to a case of diphtheria is to make an application of Smith's solution of persulphate of iron and carbolic acid; I frequently make the solution of pure persulphate of iron. I make the application with a piece of absorbent cotton, saturating the cotton in the solution, then pressing it firmly on one side, then on the other, touching the membrane firmly. I have used a great many other preparations but I prefer this. It coagulates the albuminous exudate and if applied early it contracts the dilated and enlarged blood vessels and in that way prevents absorption. If this application is made early, little constitutional treatment is needed. This application should be repeated two or three times a day or more. The constitutional treatment should be, calomel given freely for a day or two, then the tincture of chloride of iron, and if you choose the chloride of potash; in mild cases, give liquid diet, keep patient in bed. Give plenty of whisky towards the close of the disease if there is evidence of asthenia, or the disease invades the larynx.

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## AN INSTRUMENT FOR APPLYING MEDICAMENTS TO THE URETHRAL, UTERINE AND RECTAL CANALS.

Read before the Section on Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

BY A. B. KIRKPATRICK, M.D.

PHILADELPHIA, PA.

In October, 1891, I showed this instrument to the Philadelphia County Medical Society, and read a brief paper on the subject. But the applicator has been so much improved and has been used so successfully since then that I think the subject merits further consideration.

The applicator is made in different sizes, the largest eight inches long with a caliber of half an inch, and the smallest of the same length and caliber of one-eighth of an inch. The medium sized one, three-sixteenths of an inch in diameter is best for general use. The tube is made straight or slightly curved at the distal extremity. It is composed of a seamless aluminium, silver or hard rubber tube. On the upper end of the tube is screwed a collar, on each side of which is fastened a ring for the first and second fingers. There is a steel rod or piston, on the upper end of which is a ring for the thumb, and just below it is a spiral spring which withdraws the aluminium tip which screws on the other end of the piston rod. This tip which is two inches long, is for the absorbent cotton when the instrument is used for liquid applications. When used for powder this tip is unscrewed and replaced by an aluminium plunger one-half of an inch long, which fits the tube accurately.

The parts of the applicator which come in contact with the liquid or powders being made of aluminium or vulcanized rubber, are not oxidized or corroded. It is so simple in construction that it is easily cleaned and kept aseptic, and is very light yet strong, and it cannot get out of order. It is very easily manipulated with one hand.

The instrument was designed primarily for the introduction of a slightly compressed pencil of powder into the uterine cervix, in the treatment of endocervicitis, endometritis, etc. Almost any power can be used, such as iodoform, iodol, aristol, boric acid, salol, sulphate of zinc or tannic acid, or a combination of them with sedatives such as cocaine, morphine, atropine, etc.

In using aristol, salol, iodoform, iodol, or sulphate of zinc, I have found it best to use an equal quantity of powdered boric acid; otherwise, they pack too solidly in the applicator and are rather hard to push out and not so readily soluble. The different powders or combinations should be in screw top bottles, about an inch in diameter and two or three inches long, and the powder should be moderately loose in the bottles, so that it will not pack too firmly in the tube.

To fill the applicator, remove the piston and press the tube down into the powder several times according to the length of the pencil desired. It can be made from one to four inches long.

After filling the instrument, before introducing it I cover the end with carbolized cosmoline, or round it out with a small piece of cocoa butter, and dip it in a solution of iodoform or aristol in liquid albolene.

If the tube is passed into the cervix half an inch to an inch, and supported while the pencil is forced gently out it will follow the canal, even to the fundus of the uterus. Several pencils can be thus introduced in rapid succession, if desired.

In introducing powders into the male urethra, the instrument should be passed in in the same way as a catheter or steel bougie, and even the straight instrument will pass nearly to the prostatic portion of the urethra. If the prostatic portion of the urethra is to be medicated support the instrument in that position, and press the pencil gently out and it will follow the urethra. If the part of the urethra anterior to the prostatic portion, is to be medicated, gently withdraw the instrument while pushing out the pencil. It is well to force a piece of absorbent cotton through the tube before sterilizing, to cleanse it and make the piston work freely.

When used as a liquid applicator, the plunger is replaced by the roughened tip on which is wrapped the absorbent cotton. This is dipped into a solution of nitrate of silver, iodin, carbolic acid or peroxide of hydrogen, and then passed into the tube and the end filled with a little piece of cocoa butter and oil. Filling the end with cocoa butter prevents any of the solution from passing out before the part intended to be medicated is reached and protects the healthy urethra, and also facilitates its introduction.

I do not use the liquid applicator for uterine applications as it has no particular advantage over the ordinary aluminium applicator if the speculum is used. Though, if one is dextrous, and it is necessary, the application can be made easily without a speculum in the same way as a catheter or sound is introduced without inspection.

In my experience the amount of iodin or other liquid that can be passed into the uterine cavity on a cotton wrapped applicator is so small, unless the cervix has recently been dilated, as to be useless. I get much more satisfactory results when introduced with a syringe. Nitrate of silver can be dissolved and deposited on the aluminium tip, and introduced into the male urethra after the manner of Lallemand's *porte caustique;* though I have never done so; for I have been satisfied with the use of a compressed pencil of powder.

Those who have used suppositories, medicated gelatin or cocoa butter, intra-uterine pencils, urethral and prostatic bougies and fistula crayons will appreciate this instrument, as it can be used more successfully whenever these or suppositories are required.

The result of my experience is that the excipient in suppositories and medicated bougies defeats the object aimed at, in that it coats the mucous membrane and prevents the absorption of the medicament, is soon liquified and is drained away from the location where placed and needed. The cocoa butter passes out and carries the medicine with it and they are deposited on the patient's clothing, which is soiled and stained.

Suppositories and bougies are expensive, are hard to keep and carry, and disagreeable to use in hot weather; moreover, they are not always at hand when most needed.

With this instrument and three or four bottles of different combinations of powders—antiseptic, sedative and astringent, an application can be made in a moment without touching the medicine or soiling the fingers. No skill is required to fill the applicator. The expense is normal, being only the first cost of the powders.

The pencil of powder dissolves slowly, liquifying and passing through the tenacious mucus, producing the full, continuous, medicinal effect on the part.

A pencil placed in the male urethra after urination, and before going to bed, will be nearly dissolved next morning, and what little remains will be carried out at the first urination. The larger sized pencil, composed of equal parts by weight of iodoform or iodol and boric acid, and moderately compressed, will require at least twenty-four hours to be completely dissolved in the uterine canal. A continuous medication can thus be maintained by one application daily. I have found it very beneficial in endocervicitis, endometritis and subinvolution; also in inflammatory and irritable conditions of the male and female urethra.

In most of the severe cases of menorrhagia and metrorrhagia that I have treated within the past year, I have first dilated the cervix and curetted and then made applications of powder. These cases have recovered promptly and permanently—much more promptly than when I have made liquid applications or used none.

With our present knowledge of bacteriology and antisepsis it does not seem rational to attempt to medicate six or eight inches of the urethra and destroy the gonococcus by giving sandal, cubebs and copaiba or even salol by the mouth. The medicament is so changed and diluted by the time it reaches the urethra, the antiseptic and even sedative effects are so infinitesimal that they do not compensate for the disgust for medicine and disordered digestion which usually results.

Treatment by injection is more reasonable, but the effects are very transient, and likely to irritate the urethra if strong enough to be of any benefit. Their use must be intrusted to the patient, which is not only a pecuniary loss to the physician, but often a misfortune to the patient, as he gets his prescription and syringe and then thinks he can finish his case himself, thus losing the necessary subsequent care and advice of the physician.

The usual result of such treatment is a protracted case of gleet and one or more strictures. I think it may be safely said that 90 per cent. of the cases of gonorrhœa are treated by druggists or their clerks; the patient, if he has not had personal experience, goes to some friend who has had for "points," and if then in doubt goes to the nearest apothecary, who gives him medicines which he renews regularly for weeks and months. This increases the druggist's profits, but the physician gets only a fee for the first consultation, often not even that.

With the use of the applicator, an acute attack of gonorrhœa can be permanently cured in from six to twelve treatments. The physician then gets his fee, and the patient realizes that he is getting scientific treatment that neither himself or the apothecary can safely employ.

I have found the daily application of a pencil of powder of iodoform and boric acid with cocaine and atropine a specific in gonorrhœa and gleet, the cases all recovering permanently in from one to three weeks, and without the usual tendency to stricture. The pencil of powder allays irritation, keeps the urethra patulous, and promotes healing without the usual tendency to contraction.

In acute cases of gonorrhea, if the urethra is very sensitive I inject half a drachm to a drachm of a 5 per cent. solution of cocaine, which is passed back past the ulcerated part of the urethra and retained for a few minutes by compressing the meatus. The application is then absolutely painless, and by the time the effect of the cocaine has passed off the urethra has become accustomed to the powder so that it gives no pain or irritation. The powder should be placed in the urethra at the seat of ulceration or irritation. This is usually determined by a bulbous bougie.

The best results in gonorrhea have resulted from the use of a powder composed of equal parts by weight, of iodoform and boric acid. Rarely has it been necessary to add a local anæsthetic to the powder when the injection of cocaine is used before. The effect of the iodoform has been sufficient to overcome the pain and irritation. The odor of the iodoform is the only objection to its use, but this can be largely obviated if care is used in the application, and if the patient is careful in changing the dressings. After the application the foreskin is retracted and a piece of borated cotton is placed over the meatus. This will be retained usually by the prepuce, and the patient can replace it when soiled after urination. To still further protect the patient's clothing, it is well to wrap a piece of lint or lintine over the end of the organ and retain it with a suspensory or rubber band placed over the lint not too tightly.

In most of my cases I use no internal treatment. Should the urine be very acid causing ardor urinæ, it should be rendered neutral by the use of citrate or acetate of potash. If there is a tendency to chordee I have found minute doses of hyoscine hydrobromate very useful. But there has been little trouble from this symptom after beginning the local treatment. The best time to treat a gonorrhea patient is just before going to bed, and applications should be made every night if possible. I will report a few cases to show the length of time, number of treatments, etc.:

*Case 1.*—J. S, aged 22, waiter; first attack began three weeks before; characteristic gonorrheal discharge; had used cubebs, copaiba, etc., internally, and nitrate of silver injections for two weeks without any benefit. He received eight treatments in fourteen days. After five treatments the discharge ceased, and at the end of fourteen days I passed a No. 30 French scale, bulbous bougie, without pain and there was no evidence of a stricture. The bougie was passed again in two weeks with the same result. There has been no return of symptoms since treatment five months ago.

*Case 2.*—C C., aged 32; special officer; attack began six months before; had had skillful treatment internally, with injections, and finally by steel bougies passed every other day for three weeks. He had improved at different times, the discharge becoming gleety and nearly ceasing; but it had each time returned, resuming the purulent character. There was a slight stricture one inch from meatus, and a tighter one five inches below through which it was difficult to pass a No. 12 French bulbous bougie. These were dilated under cocaine anæsthesia. He received fifteen treatments in thirty days, at the end of which time he was discharged. Twice in the following month, a No. 32 French bougie was passed without any evidence of stricture or local irritation. He has remained well up to this date, four months after treatment. In this case the patient was not able to get the benefit of rest in bed after treatment, as he went on duty directly after each application.

*Case 3.*—C. L., aged 24; wholesale druggist; had an attack of gonorrhœa one year ago followed by orchitis and stricture, which I had treated by this method. I was consulted first for the orchitis. He was under treatment four weeks, but I am unable to give the number of treatments. In the present attack treatment was begun during the first week and he was discharged cured after ten daily treatments.

I could multiply these cases by the dozen from a large dispensary practice, as well as from my private case book; but it would be needless waste of valuable time.

In this treatment I have had no toxic effect, nor disagreeable symptoms from the use of iodoform or cocaine, though I have used both freely in hundreds of cases. I feel confident, if surgeons would thoroughly investigate this mode of treating gonorrhœa and apply it carefully and aseptically, that very satisfactory results will follow. I have had the same favorable results after dilating the male urethra with the Otis urethrotome for old strictures.

The irritable condition of the urethra and bladder arising from enlarged prostate is readily relieved by this form of medication, as are also prostatorrhea and spermatorrhea, if supplemented with the necessary moral and constitutional treatment. There has been apparent reduction in the size of the gland. When, for any reason, it is undesirable or impracticable to treat sinuses or fistulas, either rectal or strumous, by incision, if they have an external opening they can be treated successfully by the powder applicator. The formation of pus can be checked and healing facilitated, and a continuous medicinal effect secured; while with injections of peroxide of hydrogen or solutions of iodoform in oil the effect is only transient. I use the injection of peroxide of hydrogen first to destroy the pus and cleanse the cavity, and then pack with powder. I have had uniformly good results unless the sinuses are very small and tortuous.

I hope to see this method of treatment thoroughly tested by older, more experienced surgeons, and trust they will report their results.

1745 N. 15th St., Philadelphia.

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# APPENDICITIS: WHAT IT IS AND WHAT IT IS NOT—FROM A SURGICAL STANDPOINT.

Read before the Section on Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

BY JOSEPH HOFFMAN, M.D.
PHILADELPHIA, PA.

Among many with the fear of surgery before their eyes, there is a widespread and possibly a growing opinion that the advanced surgeon of to-day rushes upon every so-called case of appendicitis knife in hand, something after the manner in which our English friends fearfully dread the wild onslaught of the murderous Comanche in Chicago. To the surgeon holding in his mind the dangers and complexities of all serious abdominal work, most of all that in which the integrity of the vital organs is involved, the eagerness with which this operation is supposed to be sought is amusing. With those to whom the abdomen is as yet a fairyland of surgery, where reputation may be speedily got, and mistakes hastily veiled in the coroner's office by death from heart failure and exhaustion, the fair field is enticing. But woe to the untrained explorer who anchors his tray beside the siren, "Appendix," floating dreamily in a puddle of pus. The electricians are happier than he, and rather to be desired. With a view of insisting rather that surgery and surgeons shall not be held responsible for every vagary of the imagination by which operation is justified, whether cause exist or not, some of the determinate conditions and considerations belonging to the operation are here briefly presented. First of all, the anatomical relations of the appendix must be considered as settled finally within the peritoneum and therefore any inflammation of the organ is necessarily within the penitoneum; and inflammation outside the peritoneum, associated with the appendix, is the result of extension of the disease from within, outward. Advancing along in the anatomical conception of the disease, we must remember that no matter what the cause of irritation or inflammation in the organ, we must not expect a common symptomatology or a fixed locality by which the disease is infallibly to be recognized or located. This opinion, in view of the somewhat general belief in the McBurney point, must be explained anatomically. In another paper I have referred to the anatomy of the cæcum as insisted upon by Rokitansky, and a careful attention to a few points, *seriatim*, must convince the most skeptical, that although in a few cases the point of greatest pain in appendicitis may be constant, still there is no anatomical ground for this, and the cause is found rather in pathological adhesions in a given line than for any other reason. The cæcum hangs more or less free in the abdomen, and has therefore considerable latitude of motion. There is first, rotation upon its own axis; second, rotation upon the mesentery as an axis; and third, upon another intestine as an axis. By rotation upon its long axis, the cæcum may become so twisted that the ileum opens on the right side, but when revolving on its short axis the appendix may be placed toward the anterior abdominal wall, or it may be placed at the posterior aspect of the intestine. It will be evident that when these motions are concomitant there will be a resultant of motion and that the location of the appendix must vary according to the movement of the cæcum. So far as the mesentery of the appendix is concerned, there is frequently a pouch between it and the ileum consisting of folds of peritoneum; by rotation of the cæcum this mesentery becomes either congested or atrophied and is thrown into a band or perforated, in either way becoming a source of danger to the near-lying intestine, for it may either choke it off as by a cord or ensnare it through the perforation, choking it in true hernial fashion.

If we consider these anatomical relations for a moment, it will be evident, first, purely that a physiological motion may result in a dangerous pathological condition, and secondly, that this physiological twisting or revolution approximating it may provoke a symptomatology most misleading, and therefore dangerous so far as it apparently justifies extreme measures. It will also explain how in many cases in which the symptomatology has been presumably grave, the trouble has suddenly subsided and may never again return, for the reason that there has been in reality no real appendicitis by occlusion, retention or secretion, but only a physiological twist and corresponding irritation which has righted itself. So far for apparent disease of the appendix; now let us look at the real disease, so far as exact location is concerned. It is the universally conceded fact, that in operation for appendicitis, the appendix is not always readily discovered. Some operators fail to discover it at all. Why this should be so, when it is alone the seat of the disease, I do not understand. Why on opening the abdomen it is not always found in the same position is easily explained by the anatomy just referred to. The position must vary with the motion of the intestines with their degree of distension, again by the accidental adhesions of the organ and the adjacent structures, and again by the length of the orgain itself. It has been found in the inguinal canal, now up against the anterior abdominal wall, and again in the floor of the pelvis. In women it is no rare thing to find it mixed up with an ovarian cyst, and it may, by extension of inflammation, cause a perforation of the diaphragm. All the facts being considered, it is fallacy to argue that lesions of the organ must have a mathematical constancy, either of kind or degree, or of situation. There must be variation in all them, according to anatomical peculiarities of the parts, and according to the nature and extent of the adhesions and the duration of the disease. These arguments and facts I consider are sufficient finally to dispose of the real value of the McBurney point, although this has had its justification in the brilliant results of the surgeon whose name it bears, and whose insistance upon the legitimacy and true *rationalé* of the operation for the disease under consideration has done so much to give it permanency in the advanced surgery of to-day.

What must be considered operative cases of appendicitis outside the presence of abscess, must perhaps for a long time remain an open question. Pus, the advanced surgeon, no matter where its location, considers a legitimate cause for attack, and when once when this condition is present, delay is no longer to be considered. As to the diagnosis of pus, the question of duration of the disease and the accompanying symptomatology of pain and tenderness is always to be considered. The temperature is not necessarily high, is often sub-normal, and if there has been rupture, shock will usually have been present according to the degree of pus-invasion and occupation. If limitation by adhesions has occurred, the patient will rally and further delay will diminish chances of recovery. The point of greatest sensitiveness connot be regular, and is in most instances traceable more to the discomfort produced by the stretching of adhesions, than to the inflammation in the appendix. If the omentum has become adherent at any point, tension, movement of coughing, turning, or any movement whatever, must be more or less painful. In the real presence of pus, if the inflammation is near the anterior plane of the belly, the walls over the seat of the inflammation are apt to be infiltrated and boggy. If, however, the appendix is deep seated in the pelvis, this bogginess, while not discoverable anteriorly, will be discovered by examination per rectum. For this reason, examination by the bowel, which is often left until the last, should be one of the first procedures to establish the diagnosis. If the tumor is above the iliac bone, or near lying to them, percussion may be dull; if however the disease is deep seated, there may be tympany, owing to overlying intestine. In arriving at a diagnosis, the moderate and careful use of salines or of calomel is of more than a little use. If the inflammation is only congestive, or is mechanical, the emptying of the loaded bowel will relieve pressure, and thereby permit a general resolution with the abatement of all the symptoms. Moreover, if the tumor is fecal, this is removed and a diagnosis rendered possible if other mass remain. The use of the spirating needle is precarious in the extreme, and is not to be advised. Pus may be so deep seated as to eecape detection, and on the other hand so situated that perforation of the sac containing it be a most dangerous step. Again, if the condition of the patient is such as to justify exploration of this nature, incision is no more dangerous and much to be preferred, as at once making a diagnosis, and affording a means for relief. In long-standing cases, motion of the right leg is accompanied by pain, and the thigh is constantly flexed, while its complete extension is either impossible or accompanied with great pain. With the mind directed to the operative feature of the disease, careful observation along all the phases of the attack will generally enable a distinction to be made between cases essentially abscess-like from the start and those of a less degree of inflammation. Among the latter that claim the attention of the surgeon are those recurrent in their type. Given a case recurring at various intervals, each recurrence marked by an increase in the seriousness of the symptoms, to the surgeon holding in mind the probabilities of the case, operation will be usually certain of selection. Every patient holding within his abdomen sufficient cause for periodic attacks of this nature, is never free from danger of a last fatal attack. In these instances the operation during the quiescency of the disease is to be considered. To my mind the argument of Senn for operation after a primary attack of appendicitis, granting that the nature of the disease is well established is logical, and the practice in good hands safe.

In the minds of many, the non-surgical treatment of appendicitis has by far the best of the argument. Case after case is cited in which recovery has taken place under the use of opium, and therefore, in the minds of those who pin their faith on the claims of Alonzo Clarke, surgery has little, if any excuse in appendicitis, if it be remembered that pain and tympany, and rise in temperature, may all exist in the right iliac fossa without the existence of appendicitis at all. Hence if a localized peritonitis, produced by the twisting or revolution of the intestines is present, opium will relieve the pain and consequently, as the gut is also thereby put at rest, in the interim it will have regained itself and the symptoms will abate.

The same logic follows the calomel or saline treatment.

If the gut is slightly twisted and congested, if it be freed from its contents and therefore given a greater possibility of physiological contractions, the normal integrity and relations are at once restored and the pain is at once relieved. Even in the presence of pus the relief of the congestion, brought about by the use of salines often conduces to the greatest comfort of the patient and gives a relief that seemingly interdicts operation. The same is true in tubal and ovarian pus disease in women.

It will thus be seen that the two methods of treatment in the non-suppurative forms of inflammation both accomplish the same thing in essentially the same manner.

NOTE:—DR. MUSSER of Philadelphia, was placed on the program for a paper on appendicitis, in the Section on Practice of Medicine, but was not present. The gentlemen who had promised to take part in the discussion were present, and the discussion was proceeded with. By consent of the secretary of the Section it is inserted with the discussion on the same subject held in surgical Section.—EDITOR JOURNAL.

DR. WHITTAKER in opening the discussion said:—So much depends upon what is meant by appendicitis. I do not like the term. I prefer the term typhlitis, and include under it all the cases of peri- and paratyphlitis, whereby I would make a distinction between inflammations which affect the cæcum, and peritonitis from other cause, as from typhoid fever, dysentery, tuberculosis, or affections in connection with the uterus and fallopian tubes. We would be better satisfied with the surgeons in their dicta if they made more of a study of etiology. They say, Cut in every case. The knife is in the air. We say, Let us first have a diagnosis. A great many of these cases depend upon tuberculosis. There is really no difference of opinion in a case in which suppuration has occurred, or where any real infection exists, and cases of so-called appendicitis are nearly all infectious processes. They are not due to mechanical irritation as from foreign bodies, enteroliths, etc. These things are found, it is true, but only exceptionally, and then as effects or accidents and not as causes. Every physician has seen cases of individuals who have suffered an attack of typhlitis once and never again. Every physician also has seen cases where the surgeon has cut down upon the cæcum and found nothing. Therefore we may put up the knife, at least until we have studied the character of the case.

DR. HOFFMAN, Philadelphia—The diagnosis of appendicitis is not always easy, notwithstanding that physicians claim that it is, whether the case is operative or not. Even cases which are apparently operative sometimes get well without operation, as do cases which are apparently very simple. The last speaker has given to the disease the name which he prefers, typhlitis, and consequently the diseases he will meet will be typhlitis and not appendicitis. Unfortunately for this theorizing it has been proven by observations in about 18,000 cases in the German hospitals that 91 per cent. of all the cases so recognized had absolutely positive disease in the appendix, so that if you choose the name of typhlitis you must choose it for 9 per cent. of 18,000 cases. In discussing this subject please remember that all surgeons do not operate upon every case of appendicitis; that is an unfair stand to attribute to us, any more than we would operate for pain without a diagnosis anywhere else. What we wish to insist upon is that a distinction must be made between typhlitis if it exists, which is very rare, and simple impaction and inflammation in the region of the cæcum and appendix: We must remember that the appendix has a mesentery of its own, that the cæcum has a rotation of its own, that these rotations take place separately, that they will produce twists in the peritoneum of this region and start up an inflammation which is simply the inflammation of congestion and not disease in the bowel. These are the inflammations which may give pain, which may give tympany, which may give a rising temperature. You know that simple colic may give a rising temperature, a simple twist of the intestine may give rise to pain and in most cases it passes away, but these are the cases which the physician will indiscriminately call appendicitis or typhlitis; these are the cases that get well with opium, and much more satisfactorily with calomel or salines, because they will clean the bowel out and restore its integrity. Such cases ought never to be called appendicitis. In regard to the treatment, or reasons for treatment of appendicitis, it is quite possible for a case to get well without any treatment at all. We all know that simple pleurisies get well without treatment; we know that cases of empyema get well without treatment; but there is no physician who has the interests of his patient at heart who will refuse to tap a pleurisy as soon as he finds it, and not wait for it to be absorbed, and certainly none of us in the presence of empyema would wait for the patient to spit it up. In these cases we must hold that primarily there is an obstruction or impaction in the appendix which may accidentally get well, just as a bullet may become encysted and the wound heal. But if we know that there is a bullet in the abdomen, likely to cause a disturbance, fever and the like, we will try and get it out. We know that these abscesses do burst spontaneously; I have known one man to expectorate the contents of one of these abscesses, another to pass it through the groin, and they got well. The gentleman who preceded me said the origin of the appendix was inconstant; I beg to differ with him. The difference of its location depends not on the anatomical inconstancy of the appendix but upon the revolution and the motion of the bowel, hence there is no use in attempting to locate the appendix by an absolute mathematical point. For instance, the cæcum revolves upon the mesentery; that will bring the appendix into one position; it revolves upon the intestine, which will bring it in another position. You may find the appendix on the anterior abdominal wall and the posterior abdominal wall, in the pelvis, on the diaphragm or in the inguinal canal, so that to look for the appendix always in the same place is to look for something you are not going to find. In reference to the treatment, a simple case without pus or inflammation will get well of itself, but if we use opium it gives the patient a rest and the bowel a chance; if we use salines it cleans out the bowel and gives it a better chance. If there is inflammatory disease in the appendix, impaction of the cæcum or anything of that sort, if there is a lesion there which is likely to make trouble let us stir it up by the use of a saline; if there is simple inflammation we will get rid of the trouble and not kill the patient.

DR. MCLEAN, Detroit, Mich.—Appendicitis is one of the large class of diseases which from time immemorial have been classed on the medical side of pathology, and so long as it remained there it was not a very favorable subject for the practitioner to meet. Since it has been transferred to the department of surgery to a great extent, an entirely different aspect has been put upon this disease. In former times, as you all know, a case of appendicitis was diagnosed simply as peritonitis and the peritoneal cavity was regarded as an unapproachable region, and these cases were simply allowed to die; the general practitioner's duty being neither more nor less than to relieve pain and smooth the way down to the grave. Now we take a different course; we open the cavity and operate. It is a very grave question how the physician regards his duty in the matter. The title of Dr. Musser's paper suggests an opening for me. It is "An Extraordinary Case of Appendicitis." I have had some fifteen cases in my own practice in the last few months—some operated upon and some treated without operation and almost all got well. A peculiar case came within my observation a short time ago: I was called across the river into Ontario to see a man who was said to be in a very hopeless condition and I was asked to go for the satisfaction of the family only, as it was not supposed anything could be done for him. When I got to the house before I entered the door I smelled the odor of his breath and expectoration, and it was very difficult to breathe in the house. The poor fellow sat there propped in a chair and struggling for breath and expectorating continually the most fetid pus I have ever smelled. On examination and inquiry into the history I was surprised when the doctor stated to me, This is a case of appendicitis. I learned from the testimony of the patient and his friends that it commenced with a painful hard swelling in the region we would expect from appendicitis and had gone to such an extent that the doctor was for having an operation, when suddenly it disappeared and this difficult breathing came on. On examination I found the right lung dull as high as the fourth rib, perfectly dull, very little respiratory murmur anywhere; what there was was tubular and you could hear loud râles produced by this fluid which was secreted. I was surprised at the diagnosis and surprised at the history and I saw plainly it was impossible to do anything for the patient. I had him transferred to the Harper Hospital in Detroit and the day after his arrival I made an opening between the eighth and ninth rib. First of all, I introduced an aspirating needle of large size and through that there flowed pus of the same character as he expectorated. I made a free opening so I could introduce my finger between the two ribs and hold it there until a quart of this stuff had passed away. I introduced a nozzle of a douche and washed the cavity out, put in a large drainage tube, washed out two or three times and in ten days the man left the hospital and shortly afterwards I heard he was going about his usual vocations. I state simply the facts and leave you to judge for yourselves whether it was or was not a case of appendicitis, but if it was, it was certainly very remarkable indeed and it serves to illustrate the fact that it is very difficult to predict in what direction a typhilitic abscess may open.

DR. MCMURTRY, Louisville, Ky.—There are two matters very important for us to grasp thoroughly in regard to appendicitis before we can reach common ground between physicians and surgeons. I believe that general practitioners who do not pay special attention to abdominal surgery rarely realize how common a disease appendicitis is. If you will examine the mortality tables reported by the health officer of any city as large as Milwaukee, you will find a number of deaths from peritonitis recorded. Peritonitis is not a disease; it is the result of a disease process, and the majority of these cases are appendicitis. Take any city in the Union of over 100,000 inhabitants and I undertake to say that there will not be two consecutive weeks in the year that there will be in the mortality table reported by the health officer less than from one to ten cases of peritonitis, and in the male nine out of ten of these cases are appendicitis. In the majority they are unrecognized in life,—they are treated as idiopathic peritonitis; but such a disease does not exist.

Dr. Whittaker's allusion to the pathology of this disease is unnecessarily complicated. We have learned more of the pathology of intraperitoneal diseases by opening the abdomen in life, than ever could be learned by opening *post-mortem*. The expressions, perityphlitis, peratyphlitis and typhlitis ought to be eliminated entirely for the sake of scientific accuracy and precision from all inflammations in the iliac fossa. Perityphlitis and peratyphilis, meaning peritonitis and cellulitis around the appendix and around the cæcum are not diseases—they are the secondary results of appendicitis; and so with the term typhlitis, which is applied to all the inflammations which originate in the appendix. I want to reiterate what has just been said, that surgeons do not advocate indiscriminate operations upon appendicitis.

In regard to the cases where the expectant treatment results in so-called cure, that is one of the greatest fallacies of statistics. Suppose a traveling man is sick with appendicitis in Milwaukee to-day and fights the attack and gets well—the doctor who attends him in Milwaukee records it as a case of recovery by expectancy. This man has another attack in Detroit, two weeks afterwards and the doctor who attends him there records it as a recovery. He has a third attack in Omaha three months later, and again it is put down as a recovery; so one patient, who will ultimately be operated upon by some surgeon, may be three times recorded as a recovery by the expectancy treatment.

DR. JOSEPH PRICE, Philadelphia—This is a subject that has given us in gynecological surgery the most anxiety and embarrassment and the most deaths. At one time it was looked upon as belonging purely to the practitioner; now we feel that it belongs to the surgeon and to no one else; our position is just this—it matters not by whom the patient is first seen, when he is suffering from appendicitis he should be turned over to the surgeon; or the second visit should be made *with* the surgeon before treatment of any kind with opium and poultices; everything else should be withheld until diagnosis is made, before symptoms of a very serious disease that kills many are obscured or masked. I shall discuss the subject very briefly and in conclusion refer to the case Dr. McLean has cited and the one I imagine Dr. Musser intended to report. I have discussed this subject with surgeons and practitioners in many States, and have had hundreds of cases carefully cited. Dr. Whitney, a justly celebrated surgeon of the Northwest, has had fifteen consecutive sections for appendicitis with one death, seeing them early and late. I think Dr. McLean has had some fifteen consecutive sections without a death, a wonderful showing. My brother has done fifteen consecutive sections in Pennsylvania and New Jersey in a very short period, taking them as they come; some far gone, some very recent and they all recovered. While doing these fifteen sections for appendicitis he has twice stepped from the train only to be told by the physician, "Doctor, you are too late; my patient is dead." The mortality has been higher between the receipt of the telegram requesting him to come at once by the first train, and the visit of the surgeon, than after operation. I allude to this only to indicate the importance of an early diagnosis. Now, understand, we are talking about appendicitis; please do not mix it up with anything else, with chronic constipation, or impacted feces about the head of the cæcum. Patients suffer from pain or trouble that simulates appendicitis very decidedly with a loaded and impacted head of the cæcum. From the medical aspect of the trouble you can make no such showing. The mortality at present is very low following the interval of the first, second, third or twelfth attack; the removal of the appendix in that interval is at present practiced with about a nil mortality. In my own work I have not lost a case; I have removed from seven to nine following the third, fourth, seventh and sixteenth attack without a loss. Dr. Musser's case is one in point; this young lady, aged 17 or 18, had a first attack at 11; she had a serious attack last summer and some physician urged its removal; she returned to Philadelphia to one of our brightest clinicians, but he was not willing to urge this woman into a section without exercising his own judgment in the matter. He put her to bed, giving her the benefit of the rest treatment and in the midst of it she had another attack of appendicitis and came near perishing, and he asked me to see her. Three of these attacks occurred about the menstrual period and he feared dysmenorrhœa; he telegraphed me on the morning of the operation to wait and he would curette and see if there was any trouble in the uterus; to this I did not answer, but went. She was placed on the table for section; it was not an exploration. Let me say I am not in the habit of covering up ignorance by exploration. If I do not make a diagnosis I do not touch the patient. I had all confidence in the diagnosis; three or four physicians had seen this young woman and I knew there was trouble about the head of the cæcum. There was not a shred of adhesion, the appendix lying in the pelvis like a little sausage three and a half inches long and three-fourths of an inch in diameter. It had simply been a retention sac without rupture. I transfixed it and tied it away, took a needle and turned the stump into the cæcum and stitched over it. She made a beautiful recovery without unfavorable symptoms.

Dr. McLean has invited our attention to a diagnosis made by a provincial surgeon or physician. We know these men are educated physicians, as a rule, and they are keen diagnosticians. I am satisfied that the physician who called Dr. McLean was correct in his diagnosis. I will simply call attention to one case to verify my statement: Dr. Kellogg of New Jersey, an excellent physician of varied experience and good judgment, a few years ago asked Dr. Da Costa to see a patient who was suffering with appendicitis. Dr. Da Costa agreed with the diagnosis. A short time after this consultation a second took place. Again it was appendicitis. A few weeks later they agreed to treat this boy with poultices and a few weeks later he discharged the products of this appendicitis through the esophagus and got well.

It is of paramount importance that physicians and surgeons should understand each other on this subject; that we should decide now and forever whether it belongs to practitioners or to the surgeon. Assuredly it is a surgical disease, and it should early and always go into the hands of the surgeon; the physician should cease to cover a suppurating appendix with poultices and treat the patient with powders until it is too late. We have attempted many times to save these patients, reasoning that we should give the patient one lingering chance for his life; this gives surgery a black eye. I am in the habit of asking the physician how long the patient has been sick. He answers, Two weeks. I ask, Is the patient dying? If he says yes, that settles it; it is folly to operate on a dying patient. At the same time it is our duty to give the patient this one chance for his life. In alluding to Musser's patient, I will say we nearly always find adhesions both omental and intestinal. It is important to consider the character of the operation with a huge tumor in a chronic case of appendicitis and in neglected cases. In the neglected cases the lateral incision with resection and drainage will save about all of them, but if there is obstruction with six to sixteen inches of ileum coiled up and fixed with adhesions and obstruction of the bowel it won't answer, and I am satisfied that some are lost by not considering that point. In that class of cases the central incision will answer best. You can deal with extensive adhesions and complications by that incision better than by the lateral and you will do very much less mischief in freeing these extensive bowel adhesions, and it will have to be followed by thorough toilet and well placed drainage. This appeal is simply made in the interest of patients and not in the interest of surgeons and gynecologists.

Dr. Hobart A. Hare, Philadelphia—It is not every one who is situated in a city where there are such successful operators as Dr. Price and his brother. I was taught by Dr. Price the value of operating early in these cases. I have found in private practice that patients object to an operation; they will say, "Doctor, can't you do something for a little while to overcome the inflammation?" In many instances such a request is dangerous, because it is a temptation to the physician to temporize; but on the other hand it must be possible to have acute inflammation in the appendix without the formation of pus. You can have inflammation in any part of the body without the formation of enough fluid pus to do any harm. A man in my ward at the St. Agnes Hospital was in bed for a number of days with acute inflammation which was diagnosed as appendicitis by several of my colleagues on the surgical and medical staff who were imbued with the idea that all such cases should be operated upon. I insisted on an operation but the patient refused for a number of days, but finally consented. When the appendix was found it was red and inflamed, but there was absolutely not a single drop of pus in it. I believe it is feasible for the physician to temporize at least so far as to modify and allay acute local inflammation. I think the surgeon should be called in at once when the physician has an idea that pus is beginning to form or is present. I think I should say to a patient: Here is a disease in the abdominal cavity and I want to call in such a man because he is an excellent surgeon, not so much for him to decide whether you should be operated upon as to get advice from him whether pus is present. If pus is present by all means it should be cut into. But I do not think we ought at the very first instant say, because there is inflammation here, go to the surgeon. I do not think opium is a good thing to use, not because of the harm it does to the intestines but because it masks the symptoms to such an extent that we have a valuable indication of pus formation taken away. The patient ought to be kept quiet, so if the surgeon is to operate you can use a rectal injection or anything to influence the inflammation locally. I do not think purgatives should be used under any circumstances prior to operation. I want to protest against the opinion that has been expressed that all cases of peritonitis in the male are due to appendicitis. I doubt if the doctor can prove that this is true. I have seen peritonitis in which the inflammation started in other portions of the abdomen. In my own case I was taken with acute enteritis involving the sigmoid flexure, and finally the entire peritoneum was involved. This was fifteen years ago; I was treated by belladonna and other things, in the hands of a skillful practitioner, and it is unnecessary to say that I recovered. So I know that it is possible for peritonitis to start in some other parts of the abdomen.

**Dr. C. Sihler**, Cleveland, O.—I am an ordinary doctor but a great friend of the surgeon, and I have acted upon Dr. Price's suggestion when I could, and I must say the majority of these cases have gotten well. None of them were of the trifling kind. While I believe every one is a surgical case, yet the cause is different in each; take a wound on the hand, it makes quite a difference what sort it is, whether a scratch or a foreign body; in either case we will have pain and trouble, but the outcome will be entirely different. The difficulty with me is to tell what the trouble is in these cases of appendicitis, if you like that term, and I think it is as good as the other—it shows where the trouble is just as much as does typhlitis. This is the difficulty physicians have: shall we tell every one of our patients to have the abdomen cut open, or which ones shall be cut open? I shall be very glad to hand every one of these cases over to the surgeon and have him decide, but my families say to me, "What would you do?" and I am in great trouble over it. I hope from this discussion we will be able to decide which of these cases should be operated upon and which not; it would be a great advantage in the practice of medicine.

**Dr. Reed**—I have no doubt that when Dr. McLean's interesting case was being presented it flashed upon the minds of many that this was not a case of suppurative appendicitis but possibly of empyema, simply because of the deposit and the remote point at which it was liberated. I have opened an abscess originating in suppuration of the vermiform appendix, making the opening in the popliteal space and have passed the drainage tube from the popliteal space out in Ponpart's ligament; so when we speak of these remote deposits of pus and the remote point of exit we are not taxing the credulity of those who have become familiar with this disease by actual surgical experience. Dr. Whittaker takes the surgeon to task because he records his surgical procedures and recoveries, and perhaps deaths, but fails to illustrate those interesting problems of etiology which go far towards solving the question. I believe that foreign bodies in the peritoneal cavity, pus pockets, and the frequent constriction from distortion of the appendix by virtue of the excessive rhythmic activity of the head of the colon, these constrictions coming primarily from adhesions are perhaps the most important and well demonstrated cause of this disease. I am glad to hear that physicians do not wait for patients to become saturated with pus before sending for the surgeon, and I am willing to hear testimony to the fact that such progressive physicians as Dr. Whittaker do not ask surgeons to operate on moribund patients. In my own city within the last ten days I was called upon to operate upon a patient whose abdominal wall was distended like a bass drum, who was practically moribund. When the post mortem was made the abdomen was found full of pus and there was an enormously elongated vermiform appendix. This is but one instance of almost a dozen that have come to my observation in the last two years. It is not true, therefore, that all physicians engaged in general practice recognize the importance of this difficulty and advise early operation in these cases. This discussion is calculated to bear good fruit with those gentlemen who by reason of their occupation are unfamiliar with the results obtained by the surgeon in these cases, and who stand somewhat in awe of surgical procedures which impress them as being more or less formidable. The impression has gone out that surgeons sometimes operate upon these cases and do not find inflammation but do find adhesions. Will some one kindly inform me by what means adhesions originate unless it is by previous inflammation, and whether we must not recognize in their existence a constant menace to the life and strength of the patient? Dr. Hare has formulated a rule which I think in the main is a safe one, that during the first attack surgery should not be contemplated until there is developed a distinct indication of pus. I believe with him that the rule ought to be adopted and that wherever pus symptoms exist incision should be made. There is another class of cases that should be operated upon without reference to the history of pus; that is the recurrent cases in which by the very fact of recurrence we have demonstrated the existence of adhesions which are calculated sooner or later to bring about suppuration at this point. These cases should be operated upon by ligation and during the quiescent period if possible. The idiopathic origin of peritonitis is I think a definite outline of pathology. There has been perhaps no stronger confirmation of the point the surgeons are contending for than the statistics of Dr. Fitz. He presented figures which proved conclusively that the mortality following operation was greater than that following the let-alone policy, but that was when the let-alone policy was the one preëminently followed by all practitioners of medicine. But when we have the revised statistics from Fitz they will show that these conditions are reversed, because, as has been indicated by the discussion here, the trend of practice is to the early detection of suppurating conditions, of recurrent attacks and of early operation. So that to-day surgery is making its best record, making a better record than in the past and one to be excelled only by future attainments.

**Dr. J. B. Murphy** of Chicago—Cases of appendicitis should be divided into 1, catarrhal, without perforation; 2, suppurative, without perforation; 3, perforative, with local peritonitis, and 4, gangrenous. It was formerly believed that there were many cases of perityphlitis without appendicitis, but I have yet to find one single case of that kind. The appendicitis will always be found primarily. In ninety-five laparotomies which I have made I have found in every one a lesion of the appendix. We can have the suppurative variety without perforation and it will be found that the peritoneum can become infected without perforation having occurred. As to the time of the operation—when to operate and when not to operate. In Germany they advocate not operating, but in my large number of cases in nearly every one I found a lesion of the appendix and pus in all but two. We have to trust to fortune for the opening of the pus into the bowel. That is nature's way—a good one if it occur, but the patient may die of general peritonitis while we are waiting. I have not seen one case of so-called idiopathic peritonitis. I have always found that it was the result of a lesion. Appendicitis is the cause of death in many of these idiopathic cases. You should operate the moment you have made your diagnosis; the earlier you operate the easier it will be to operate. When the classical symptoms are found that is all you need to wait for, and if you cut down then I believe you will find a lesion of the appendix. Make your diagnosis the first time you see your patient; then the appendix has the advantage of being easily removed, but if you wait a few days it may be very difficult to find it and remove it and then there will be great danger of extensive infection from the accumulation of pus. Remove the appendix in every case, if you operate early; if late, it will depend upon the condition of the patient; if necessary it may be left behind and removed subsequently. Out of my ninety-five cases there were four deaths.

Dr. N. Senn of Chicago—A few statements have been made here which might mislead the general practitioner. First, as regards the ease of operating in the first three or four days. I have always looked upon the removal of the appendix as a not very easy matter, even when it is in its normal condition. So I would give warning against undertaking the operation on too slight grounds. It is easy to preach such doctrines as making a diagnosis from the classical symptoms and shelling out of the appendix and cure of the patient, but it is a different matter in active practice. The tendency is in the other direction.

When the patient has had repeated attacks, there can be no question as to the propriety of operating. but I always hesitate about advocating operation in a first attack. As regards the diagnosis, while in nine cases out of ten we can rely on the classical symptoms, there are many sources of error, particularly in the female. When the operation is undertaken we should remember the difficulties attending it, in order to make adequate preparations.

Dr. Thomas of Pennsylvania—There are fashions in surgery and in other things. I am not opposed to operating when it is necessary, but we should give nature a chance—she does wonders. My experience differs from that of most men. In the past twenty years I have had on an average of from three to five cases of appendicitis every year, and not one died. I don't rise to speak against the operation dogmatically, but most cases will get well without operation, and many that have been operated upon and died would have recovered without it. The peritoneum has been entered in the search for this disease when it was not found, and the patient died.

Dr. Gaston, Georgia—My experience is unique in these cases where perforation has occurred. I have had four or five cases of perforative appendicitis where collapse occurred; sometimes I operated and sometimes I was kept from it by the advice of others. If the operation can not be done in the first few hours after the escape of fecal matter, we will find a necrosed condition of the serous membrane, and then the operation is of no avail. I do not consider that McBurney's point assists the diagnosis much in the early stages. If we could fix on these cases early and operate we could probably arrest the disease.

If we allow the proper moment to pass, it is gone forever. I am against the view that we should temporize. We are on the safe side in operating when we have the indications of appendicitis.

Dr. Ruth, of Iowa—It seems to me unfortunate that any of us should feel like temporizing in view of the unsatisfactory history of the treatment of appendicitis in the past and the fact that nearly all cases tend to recur. The old idea about idiopathic peritonitis should no longer be thought of. I saw one operation performed for appendicitis and no evidence of appendicitis was found, but the error was on the safe side because the danger attending the laparotomy was almost nil.

Dr. Lydston of Chicago—It would be difficult for the general practitioner listening to this discussion to know exactly what he is to do. There is no question that could bring out more diametrically opposed opinions than have been expressed here in the discussion of this subject. We all know undoubtedly of many cases of appendicitis which got well without operation, and we also know of many that died without operation.

I think we are safe in concluding that the truth lies between the two extremes advocated. We do not so much want so many arbitrary expressions as we do careful study on the part of all, so the physician and surgeon can go along in their work hand in hand. Conservatism is a good thing but when there is no abdominal surgeon standing at one's elbow it is not the kind that is most conducive to the life of the patient. I have seen this style of conservatism calmly standing over a case of peritonitis from perforative appendicitis. There is a vast difference between that kind of appendicitis and the slow kind where there is no great tendency to the formation of pus. We should not conclude that all cases should be treated conservatively or all operated upon. I differ with Dr. Murphy as to the ease of diagnosis. Whenever you are able to diagnose appendicitis from the presence of induration, pus is already present, and conservatism is then very dangerous.

Dr. Somers of Missouri—In lecturing on anatomy I have found it more difficult to find the appendix in the normal subject than in the pathological condition of appendicitis.

Dr. Hoffman in closing said:—I wish to thank the gentlemen for the breadth of their discussion, the bringing out of which was the real object of my paper. I wished primarily to draw out the difference between operative and non-operative cases. He who insists that because a few cases get well spontaneously all ought to, argues from a very bad standpoint. There must always be operative and non-operative cases. Those which recur are always operative, as also are some of those that come on primarily. I wish again to refer to the point that nature does wonderful things, but I think that in a case of appendicitis she has had her chance and failed and is working backwards. I call attention to the fact that we do not apply the waiting doctrine to empyema. The logic of waiting is bad logic. In reference to Prof. Senn's remarks about the difficulty of the operation, I can say that my first one was certainly not easy. In women the condition is apt to be complicated by pelvic troubles, and the diagnosis is then not so easy. The time for the study of the case is certainly in the first twenty-four hours. The difficulty of diagnosis must depend on the mobility and length of the appendix, which it has been demonstrated varies from one to ten inches.

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# SUPPURATIVE APPENDICITIS.

Read at the Meeting of the Missouri State Medical Association at Sedalia, *Mo*, *May, 1893.*

BY L. H. LAIDLEY, M.D.

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The history of the cases of appendicitis given in this paper warrants me in making a few remarks upon its pathology and diagnosis. Until recently the anatomy of these parts was not fully understood. Mr. Treves, in 1885 called attention to the fact that the cæcum itself is entirely covered with peritoneum, which after enclosing it is reflected upon the posterior wall of the abdomen, being continuous with the ascending mesocolon where this fold exists. This organ lies quite free in the abdominal cavity, allowing it to enjoy various movements owing to its structure and attachments. Rokitansky describes these as three-fold; first, rotation upon its own axis; second, upon the mesentery as an axis; and third, upon other intestines as an axis. From these movements the location of the appendix will vary even in health, and especially is this true after the results of inflammation have taken place. A knowledge of this is important, especially in the primary operation, that the least time may be consumed and that the intestines may not be disturbed; hence, we find that its usual anatomical position of backwards, upwards and inwards is not always the position occupied by this body. As a result of repeated attacks of inflammation this organ is always displaced and its anatomical structure is so confused that the greatest care is required to locate it. Kraussold, Toft and others, show that the various diseases of the cæcum are but the sequelæ of appendicitis, and there are those who, with the evidence before them, claim that only as an exception to a general rule is any disease of this organ found, except as primarily beginning in the appendix vermiformis.

Dr. McMurtry reported a case of stercoral colitis with perforation of the cæcum before the American Medical Association in 1888, which can be classed as an exception to a general rule, and I prophesy the day will come when the terms used to express the various forms of inflammation of the cæcum will be supplanted by that which will express a true pathology of these varieties of the same disease. Only upon a true pathology can we establish a true diagnosis, the principal symptoms being a localized pain, tenderness, swelling, rigidity of the abdominal wall on the right side, and other symptoms suggestive of circumscribed peritonitis in the ileo-cæcal region. As long as the disease is limited to the appendix the swelling is not distinct, and if the appendix is located behind the cæcum it eludes detection. Constipation and vomiting are usual accompaniments which may confuse in making the differential diagnosis from intestinal obstruction. With a diagnosis fully made, what is the duty of the attending physician? With the pathology of this disease fully settled to be primarily an inflammation of the appendix, how shall it be treated? There has been so much said in discussing this subject that we all feel warranted in an operation in properly selected cases. Apropos of the former dilly dally methods of the so-called "conservatives" in medicine, "who believed in opium, poultices and funeral rites," we have two classes of counsel in regard to operation. The first is, that upon a real danger signal—persistent pain, high temperature, greater or less in duration—operation should be resorted to; they also advise mild purgatives. Of the other faith are those who counsel waiting, with the argument that in reality few cases of appendicitis result fatally and that a great majority recover under rest, poultices and opium. A third comes forward and advocates an operation between the attacks. Among this number are Drs. Senn and Treves. Dr. Senn also urges an operation before inflammatory adhesion takes place, while Dr. Treves believes in waiting until all inflammation and other symptoms have ceased. Dr. Senn dwells particularly upon the safety of such an operation; Dr. Treves says: "I have excised the appendix in a large number of cases and up to the present time have to record no death as resulting from the operation." In the light of the following cases I believe that to wait is to jeopardizé the lives of our patients; that Dr. Senn's position is the correct one, to operate early before adhesion takes place, although inflammation exists, and not to wait for a recurrence as Dr. Treves would advise. Discussion has been going on as to the best method of operating upon these cases, the proper line of incision, as to whether drainage should be employed, etc. Certainly there can be no fixed rules in every case, for we rarely find the same conditions to deal with. An incision should be made that will expose the parts to be operated upon and not injure any part that should be protected. As to the drainage tube, it should be employed where it will save life. Mr. Tait says it decreased his mortality from 10 to 25 per cent. This may not be ideal, but it is common sense and it is profitable both to the surgeon and the patient. In illustration of this topic I report the following cases:

Mrs. S., aged 29; married. Has one child living; two miscarriages. Had been in good health prior to six weeks before I was called. During that time she had been attended by three prominent practitioners. She gave the following history: Was taken with a severe pain in the right inguinal region, the pain disseminating from McBurney's point towards the umbilicus and extending up as far as the gastric region, attended with nausea, constipation and unbearable suffering within that time. She had been informed that she was pregnant by the first doctor in attendance. She called a second, a prominent gynecologist of this city, who, passing the hand over the distended abdomen, told her she had womb trouble, and to come to his office the following Wednesday and he would treat her, charging her $10 for his valuable information, and instructed her to have leeches applied over the abdomen, which was done. The ecchymotic points at the time I operated upon her showed the ravages of these animals upon this poor sufferer, for which she had to pay an additional fee of $10. I examined her on April 1, 1891, at her home. She then had a temperature of 103 2-5 degrees, pulse 119, weak and irregular. Her senses were blunted, she being in a moribund state, caring little as to what was going on. The abdomen was distended from the pubic arch to the margin of the liver, the right side being greater than the left. Upon percussion there was dullness over the right side of the abdomen. Fluctuation was noticed over the greater part of the right side extending posteriorly. She was sent to the Protestant Hospital that night and early the next morning I operated for suppurative appendicitis. An incision four inches long was made along the outer line of the rectus muscle, which allowed the escape of one gallon of pus. It was so eager to escape that as soon as the knife entered the cavity it spurted out a great distance and was exceedingly offensive. Over the region of the cæcum and within this immense sac outside of the peritoneum; the skin and fascia making its outer covering. I removed this necrotic appendix vermiformis adhering to a thin sheet of peritoneum. I submitted the specimen to Dr. D. V. Dean, who pronounced it the appendix and its hardened secretion in its lumen. The cavity was very extensive, the pus burrowing from the pubic arch to the line of the liver and back of the kidney, at which point a counter opening was made for more complete drainage. The parts were washed with 1 to 1000 bichloride solution, after which it was washed with hot Thiersch's solution once or twice a day until the cavity began to fill up and heal. The patient made a very slow recovery, being confined to her bed for two months, when she was able to move about the house for the first time. She recovered with an enormous ventral hernia in the right lumbar region, owing to the destruction of the muscular tissue from the long retention of pus in that region. I proposed an operation for its cure, but I am doubtful if much good can be accomplished by such procedure because of its extent.

Miss R., aged 20, student at the high school; had enjoyed excellent health prior to her present attack of pain, which began the day before my first visit, July 28th, 1891. The pain began with a distinct chill; had no former attack of a like character. Her temperature was 100 1-5 degrees, pulse 100, full and hard. The pain began immediately over the region of the cæcum extending backwards and upwards, and was attended with vomiting and increased pain. The right limb was drawn up and held in that position to give relief. I announced the diagnosis to be appendicitis and urged immediate operation. The widowed mother demurred and after a time refused me the privilege of an operation. I ordered saline cathartics, chloral with extract of hyoscyamus to relieve pain, with hot poultices over the parts affected. The temperature ranged continually from 101 to 103 degrees, with increased frequency of pulse until the sixth day, with a slight bulging over the region of the cæcum and with conjoined touch I discovered a fluctuating tumor in the region of McBurney's point. I was then permitted to make the operation by making an incision along the rectus muscle developing a sack of pus which contained about eight ounces which was removed with the débris of the appendix vermiformis and the specimen of an enterolith weighing about 10 grains which had dropped down into the blind pouch causing plastic inflammation, ulceration and perforation, and the formation of the cavity outside of the peritoneum. The wound was rendered antiseptic and carefully drained, which allowed the patient to make a speedy and rapid recovery and she now enjoys uninterrupted good health.

Mr. K., aged 20, had been ill for six weeks supposedly with typhoid fever (?). He had been under the care of a prominent homoeopath and finding he did not get any better I was called on August 12th, 1892. I found the patient with a history of pain beginning in the region of the cæcum accompanied with fever alternating with rigors. I could not get a satisfactory history of the case up to that time but on examination I found a tumor in the left inguinal and hypogastric region to the left of the bladder in front of the larger bowel. By conjoined touch, which was made under an anæsthetic, I could feel a round, fluctuating tumor about three inches in diameter. All the organs of the body were normal. The bladder was emptied, the lower bowel was washed out with an enema; with the previous history, the pain beginning over the region of the cæcum, fever accompanied with rigors, I made out a diagnosis of suppurata appendicitis. On the following day I made an incision over the tumor, beginning over the middle of Ponparts ligament extending upwards about four inches, opening the abdominal cavity and exposing a glutinated mass of omentum low down in the cavity which was an indication of the location of the sac of pus. This was broken into by the finger, the cavity thoroughly opened which was walled off by a plastic inflammation. The pus was washed out by a liberal use of sterilized hot water. The sac evidently was formed by the borrowing of pus from the region of the appendix vermiformis and had formed a deposit at this point. After thoroughly cleansing the parts an iodoform gauze packing was introduced into the lower angle of the wound which was retained until the following day when it was removed; the cavity flushed with sterilized water and a drainage tube introduced, which was allowed to remain until the third day when it was removed. The patient made a speedy recovery suffering from a large varicocele, evidently due to pressure upon the spermatic veins arising from injury to those parts during the operation. He has entirely recovered from that affliction and enjoys excellent health with no evidence of a recurrence of the disease.

Mr. Jos. W., of Dallas, Tex., was taken ill for the third time on September 9, 1892. He had been treated at each time for acute appendicitis, the treatment being applications of ice over the region of the inflammation with saline cathartics, etc. At the time I was called he had the well marked symptoms of pain over the region of the cæcum, but more especially did he suffer from pain in the stomach. He had been given a hypodermic injection of morphine which helped to obscure the symptoms, a most pernicious custom. I ordered saline cathartics with chloral to relieve pain and hot applications over the abdomen, and had the patient removed to the Protestant Hospital the following day. His pulse ranged from 88 to 100, temperature from 100 to 102.3-5 degrees. On the 13th I opened the cavity over the cæcum, carefully dissecting the tissues to avoid the peritoneal covering until it was determined there was no sac formed outside of the peritoneal covering. When the abdominal cavity was opened a somewhat unusual condition was shown. The cæcum was movable, and on being lifted up it was discovered that a thin fold of omentum was adherent to its wall posteriorly, forming a sac which contained pus and the remains of the appendix vermiformis, a portion of which remained showing the character of that organ. The adherent omentum was carefully detached and that part which had become necrotic was tied and cut off. The cavity was washed out with warm sterilized water, the opening packed with iodoform gauze, which was removed on the following day. The cavity again being cleansed, a smaller packing of gauze was introduced. From this time the patient made an uneventful recovery, since which he has been in perfect health.

Mr. T., aged 49, healthy, except occasional attacks of indigestion causing pain in the right inguinal region. Had in the past six months two other attacks of pain which had passed off after he had taken a dose of castor oil and laudanum accompanied with rest for a few days. I was called to see him for the first time September 21. His pulse was 100, full and hard, temperature 101 degrees; pain in back and side, chiefly in the region of the cæcum. He had taken paregoric for the past two days and was fully under its influence when I examined him. I continued to visit him, ordering saline cathartics and chloral to relieve pain. On the 23d I for the first time discovered dullness over the region of the cæcum; on the 24th he was placed under the influence of an anæsthetic; an incision was made over the most prominent part of the field of dullness, cutting into a sac of pus which was small, containing not more than one or two ounces with the débris, composed of the broken down appendix vermiformis. The sac was washed out with a hot bichloride solution, the cavity packed with iodoform gauze, which was the beginning of a speedy recovery which took place within the following six weeks.

Mr. R., aged 16, student, had enjoyed excellent health until his attack three days before I was called to see him, August 26, 1892, giving me the following history of pain in the right iliac region with range of fever from 100 to 103.3-5 degrees, pulse 85 to 104. On the fifth day a tumor the size of an orange was discovered by conjoined touch, which prompted an operation the following day. The patient had been treated with cathartics, pain relieved by chloral and hot applications over the inflamed surfaces. On the sixth day an incision was made over the tumor, which was opened and about six ounces of pus evacuated. The cavity was packed with gauze, allowing free drainage. The patient made a speedy recovery, since which time no recurrence of the disease has made its appearance.

Mrs. L., colored, aged 23 years, came to the outdoor department of the Protestant Hospital some time in 1892. She suffered great pain over the region of the cæcum which continued for about a week. I did not see her for about four or five days after her first visit. I was called to see her in great suffering, and upon examination I found a dullness over the region of the cæcum and by conjoined touch I could feel a fluctuating tumor. I made an incision in the usual line, opening into a cavity of pus which was discharged, the parts washed out as well as the surroundings and circumstances would allow, the cavity packed with gauze which was removed on the second day and again dressed. The patient made a good recovery notwithstanding she was surrounded with filth and poorly fed.

Miss T., aged 22, sister of a West End physician. I was called to see her late in the fall of 1892 and found her suffering from pain in the right inguinal region beginning at McBurney's point and extending over the abdomen. She had fever with a temperature of 101 to 103 degrees, pulse 110 to 120 weak and irregular. She suffered with nausea, vomiting and constipation. I could by percussion notice a dullness over the region of the cæcum. I made a diagnosis of appendicitis and urged an immediate operation. The family would not consent to it. Afterwards I learned from her brother that she had passed quantities of pus with the stool. She continued to have fever and in about a fortnight she was taken with a violent attack of phelegmasia dolens. I was called to see her again when she was removed to the Protestant Hospital for treatment. The circumscribed dullness over the cæcum had disappeared. The pus evidently had burrowed under the peritoneum to the region of the left caphenus vein, which had produced obstruction of that vessel causing the phelegmasia dolens leaving the poor suffering patient in a most deplorable septic condition. The fever did not abate up to the time she left the hospital, which was three months after the first time I saw her. I hope but cannot believe that she will enjoy health even if she does not perish from this unfortunate condition brought about by this disease, and especially since she was denied the only remedy, a surgical operation, which in my opinion offered her the only hope of health or security from death. (I learn that she has since died.)

In conclusion, the symptoms attending this disease are as distinct and definite as any other affecting the abdominal region. Mistakes in diagnosis should be an exception; that after a diagnosis is made it becomes purely a surgical case and as such it should be treated; that such methods of operation should be used for the removal of cause of the disease, namely, the removal of the appendix; that drainage should be employed in cases where pus is likely to jeopardize the life of the patient; that the earlier the operation is made the safer it will be to the life of the patient, as well as protect the health of the same. Above all, the public should be enlightened and a proper estimate placed upon the danger of this disease and that surgical interference is the only rational treatment.

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## SELECTIONS.

**Children's Rights.**—In a recent address to the graduates of *the Marion-Sims College of Medicine*, Prof. I. N. Love, among other bright sayings, said:

Time was when the only right seemingly granted to children was the right of being born, and to this day this right is granted them without their comfort or wishes being consulted. They are fully justified often in asking the question, "What are we here for?" Surely in response to the selfish desires of the physical authors of their being. The changes have been rung for centuries in monotonous regularity upon the great obligation which children are under to their parents for bringing them into a world of suffering, care, worry and death. There are many who still think that the only right of the child is to be born or by those puritanically inclined, it may be granted the additional right of being "born again" or else damned forever. All will grant the truth of Tupper's announcement that "a babe in the house is a well-spring of pleasure;" at least if it is not, it should be. Is there anything more beautiful, more sweet, more lovable, more heavenly, than a baby? Nothing, unless it be two babies. Yes, truly a baby is a thing of beauty, and we have good authority for the statement that it is a joy forever; but are babies developed in the direction of being perpetual joys? Does their loveliness increase? Will they never pass into nothingness or, what is worse than nothingness, cussedness? As the statement has often been made, that the problem as to whether life is worth living depends much upon the liver, so we are safe in saying that the question as to whether a babe is worth the borning and all that the term implies, depends much upon those engaged in, and responsible for, the borning.

I make bold to say that the men who have invested their money and given their gray matter toward the raising of the finer breeds of horses, cattle and others of the lower animals, manifest greater intelligence and appreciation of their awful responsibilities than do the average parents. Unquestionably, one of the greatest obstructions to-day to the proper appreciation of duty on the part of parents to their children, is due to the maniacal struggle for money and place. Fathers work frantically day and night for gold with which to buy position and power. Mothers, too many of them, are filled with the desire for social preferment or the securement of that place in society which will enable them to outshine some one else Both father and mother should be satisfied with a less degree of success in these directions, and determine in the beginning of their career to work toward the furnishing to the State of high-bred, good blooded children. There is one thing in the Catholic church which commands my admiration, and that is their teaching in the direction of duty to the home and the children, particularly upon the part of mothers; in fact, I am strong in the belief that the world owes much to the Catholic church for its noble fight for the rights of motherhood; for the nobility and the dignity of motherhood. It might well be called the "Mother" Church if for no other reason than that of having placed the Virgin Mary upon the level of God himself, thus putting maternity close to Divinity.

It is the right of every child to have something more than the privilege of calling a man father. It is his right to have that father realize that "filial affection, like patriotism, must be engrained as an obligation, a thing to blush at if not possessed." If, however, the father absorbs himself only with money getting and the fumes and frets of trade, profession or the commercial world during the earlier years of the child's life, need he be surprised later in life to find that he knows not his own nor does his own know him?

The father calls the child into being. Having done so, he assumes a duty which he should *not* neglect. *It is the right of every child to have* something more in his father than a mere provider of food and raiment. Does the father want the honor, the respect and the enjoyment of the sweetest part of life, he must needs make himself acquainted with his child from the day of its birth on. It is as much his duty to study the disposition, character and general human nature of his child, as it is the mother's; indeed he has no more right to shirk his part of the sentimental relations between parent and child, than has the mother. Of course the father who *neglects the material interests of his children on* the theory that what was good enough for him is good enough for them, "should pay conscience money to his own father." All children have the right to claim that their parents give them the benefit of the mistakes made in raising them; in truth, parents might well take pointers from horse, bird and dog fanciers and cultivate themselves in the direc*tion of becoming child fanciers.*

I think it was Oliver Wendell Holmes who once said that the time to treat some of the ills, mental, moral and physical, of children, would been to have treated their great-grandparents.

Children have a right to ask, before being born, that their parents be healthy. A common-sense view of this question should be taken. The State should enact laws preventing the marriage of the criminal, or those diseased, mentally and physically, and all who have reached the age of sixty. The child has a right to demand, if such marriages do take place, that it be protected; [illegible] gainst the transmission of [illegible] vledge that we have, the ch [illegible] in advance of its birth, and even of its conception.

Knowing that each and every one of us is a part of all that we have met, we should realize that the child has a right to be protected from improper *associations*, whether these *associations* be the germs of diphtheria, scarlet fever, typhoid fever, or worse, the germs that are associated with vice and crime. An authority, high in the church, has given expression to the thought, that if children can be kept under the church influence until the age of seven, they are secured in their faith through all coming time. How many parents realize this fact?

Children have a right to demand the completest cultivation of one *of the most important organs given to them*, namely, their voice. They cannot all be made good singers, but the voice of every individual child can be developed in the direction of being beautiful. I believe that nowhere on earth is the human voice more neglected than in America. The number of shrill, harsh-voiced girls that one comes in contact with daily is appalling. Too often not sufficient attention is given to the voice and the habit of loudness and carelessness of speech is developed." The girl has been badly educated, and the boy as well, no *matter what may be their accomplishments, unless they have* learned that the secret of being understood lies more in enunciation than loudness. There are more nerves being wounded and irreparably injured each day that passes by the beastly harshness and careless roughness of uncultivated voices than are being worn out by overwork or whipped out by alcohol. It will be difficult for one who ever saw the beautiful, angelic Adelaide Neilson to forget her beauty, but no one who was fortunate enough to have heard the gentle, soothing notes of her lute-like voice will ever forget that. *I think that the faithful one in dying*, as he approaches the gates of heaven, may expect to hear notes reminding him of the tones of that voice. Is there anything that is more lasting and that more frequently comes back from the way-beyond, to the ear of a boy even though he has reached his second childhood, than the gentle echoes of a sweet-voiced mother? I recall a big, strong, rough-and-ready man to my mind, who, when dangerously ill, referred to his mother long since dead, and the strongest point he made in her favor was that she was a gentle woman and so kindly voiced as always to have had an influ*ence over him in* life, beyond *that of anything on* earth; *and that the* memory of her sweet voice came to him ever and often when tired, weary and worn, and gave him inspiration.

**The Peptonizing Values of Papain.**—The *Pharmacological Record* for July, 1893, deals with the properties of papaïn as an aid to digestion. This substance is derived from the milky juice of the unripe fruit of the pawpaw tree (*Carica papaya*). The preparation made by Dr. Finkler is the one taken up for consideration in the July *Record*.

Papaïn is a most energetic solvent of albuminoid substances, in many respects resembling pepsin. Its fermentative agency is not dependent upon the presence of micro-organisms. These facts entitle the substance to be classified as a proteo-hydrolytic enzume.

Papaïn has its vegetable origin to commend its employment as a medicine. The general tendency of our times being, as the article points out, to discard so far as possible those drugs that have an animal origin, thereby evading some of the dangers of bacterial infection that inhere in devitalized animal tissues.

The action of papaïn is not impaired by the presence of most salts and antiseptic agents. It is also considerably stimulated by either dilute acids or weak alkalies, a fact which appears to adapt it to assist in gastric digestion where the reaction is acid, and also in the intestinal digestion where the juices possess an alkaline reaction.

Helbing and Passmore, the investigators in this instance, took up anew the question of the peptonizing powers of this substance and they report that their experiments show beyond peradventure that papaïn is a true peptonizing agent. It is capable of converting at least one thousand times its weight of fresh meat fiber into soluble peptone and thus bringing that fiber into an assimilable form.

**Ophthalmia Leprosa.**—*Ophthalmia leprosa* was the subject of a very interesting paper read before the St. Petersburg Medical Society by Dr. Hulanicki. He found the eyes diseased in three-fourths of the cases and always both eyes affected, though in different degrees.

The eyelids are the most frequent seat of the leprous disease, showing nodular infiltrations along the edges; but in exceptional cases only these nodes ulcerate, leading to secondary disturbances by cicatricial contractions (ectropium, entropium, blepharophimosis).

The *conjunctiva* does not seem to be the primary seat of leprous infiltrations; Dr. Hulanicki at least came to the conclusion that the nodules described by so many writers as leprous nodes of the ocular conjunctiva most likely have been episcleral infiltrations, because the conjunctiva was always found freely movable over the nodes.

In the *cornea*, leprosy produces two distinct forms of pathological changes, to wit: either a diffused progressive opacification, or a nodular infiltrate. Both forms are characterized by a very chronic course and the absence of all inflammatory symptoms. The diffuse opacity is much more frequent than the nodular form, and usually begins at the upper corneal margin, where we find a number of minute gray spots and streaks over which the surface of the cornea is perfectly smooth. These spots gradually increase in number and size, coalesce and ultimately cover the whole cornea with a dense grayish-white opacity (like a total leucoma), which destroys the sight entirely and permanently; for there has never been observed an improvement in the condition of the cornea.

The nodular infiltrate of the cornea is very seldom a primary affection; in most cases it is the product of an episcleral nodule encroaching upon the cornea. The episcleral tumor is seen to grow toward the corneal margin, where it forms a thick, half-moon-like infiltrate; its border facing the cornea is well marked and prominent. while toward the sclera it slopes down gradually; the conjunctiva about this infiltrate is always very vascular. This semilunar infiltrate slowly spreads over the cornea, sometimes getting so large as to give the anterior portion of the eye the appearance of a nodular tumor protruding between the eyelids. These tumors finally disappear either by gradual absorption or by ulceration; but in either case the morbid process terminates with atrophy of the eyeball.

The *iris* is frequently involved by acute inflammation and the formation of small yellowish-white nodules resembling tubercles or gummata; these nodules are absorbed leaving no trace behind, or a small cicatricial spot in the iris. With the iritis there is almost always an inflammation of the ciliary body and choroid, producing temporary or permanent opacities in the vitreous.

The microscopic examinations have always found the typical lepra bacillus, especially in the cells of the nodular infiltrations. These cells are lymphoid cells imbedded in a fine fibrillar network.

The treatment of the ophthalmia leprosa consists in the early destruction of the nodules either by cauterization or by excision and subsequent cauterization. In this way sometimes the further development of nodules in the cornea is prevented and a fair degree of sight preserved. The leprous iritis is treated like the acute iritis of any other origin. The removal of the nodes in the iris by iridectomy has been recommended, but does not seem so far to have given great satisfaction.—*St. Petersburg Med. Wochenschrift*, June 5, 1893.

**Rapid Demonstration of Cholera Bacilli in Water and Feces.**—Schill (*Centralbl. f. Bakt.*, June 8, 1893), having observed that tubes containing cholera culture remained uncontaminated notwithstanding frequent removal of the cotton wool plug, conjectured that germs gaining access to the nutrient medium were destroyed by the cholera bacilli, or (more probably) their products of metabolism. This supposition was borne out by an experiment, which consisted in adding to old cultures of cholera, previously sterilized by heat, pure and mixed cultures of various pathogenic and saprophytic bacteria, leaving the inoculated tubes a certain time in the incubator, and then preparing from them plate cultures. These were found to remain quite sterile, or at most to show a few colonies after the lapse of some days; control plates showed abundant growth in a day. When, on the other hand, the sterilized cholera culture was inoculated with cholera bacilli, the plates afforded evidence of growth of these organisms, even after twenty-four hours' exposure to the action of the metabolic products. Upon these observations Schill bases a method of demonstrating cholera bacilli in water and feces. Broth culture of cholera, several months old, is sterilized by boiling once; a small quantity of the water or feces is then added to it, and the whole is placed in the incubator. In two to three hours (longer if the cholera culture is not an old one) gelatine and agar plates and gelatine tubes are prepared from the mixture—the last to show the characteristic growth of cholera. If cholera bacilli are present the colonies should be apparent in a day or so. It is advisable to render all the media employed, alkaline by the addition of crystallized soda (1 per cent.), as recommended by Dahmen. By this means a soil very favorable to the growth of cholera bacilli is obtained.

**The Use of Buried Wire Sutures in Laparotomies and Hernias.**—In a severe case of abscess between the recti muscles with umbilical hernia in a child 18 months old, Schede of Hamburg, united the two muscles with silver wire sutures, obtaining the most gratifying results.

In a similar case, occurring after a laparotomy, he followed the same procedure, which resulted in his adopting this method principally in laparotomies, to avoid subsequent hernias and also for the removal of already existing hernias.

Since 1890, 150 laparotomies have been treated in this manner, resulting in 121 cures. Seven of the cases had small hernias in the cicatrix, but only four of these were directly attributable to the method of operating. The wounds healed mostly by first intention; small fistulous sores occasionally occurred, but disappeared immediately after the removal of the sutures.

While at the beginning Schede used silver wire only for peritoneal and muscular approximation, he has also employed it extensively in abdominal suturing in general, for the reason that the tension of the wire is easily regulated thus preventing suppuration around the stitches.

The sutures were disinfected by boiling first in 1 per cent. solution of sodii bicarb. and immersion in a 3 per cent. carbolic acid solution.

The dressing of laparotomy wounds when completely sutured, consisted for years in a strip of iodoform gauze from two to three fingers (breadths) wide, made to adhere with collodium.

Schede operated on eleven umbilical hernias, three hernias in the linea alba and thirteen ventral hernia. In all of these the hernial sac as well as the skin covering it were entirely extirpated.

Finally forty-eight patients with incarcerated external inguinal hernias were operated upon, six of whom died. Six with irreducible external inguinal hernias recovered completely. Sixty-eight with *reducible* inguinal hernias all recovered; however, several of this number later on had a recurrence of the trouble. Of thirty-four patients with incarcerated femoral hernias, three died. Out of four with *irreducible* femoral hernia, one died. Twenty-four patients with reducible femoral hernia were all cured, only one having a relapse.

The total number of relapses (10 per cent.) is relatively small, though Schede allowed no trusses to be worn.

The pillars of the ring were united after extirpation of the sac, by six to eight buried sutures. The remainder of the wound was closed without drainage by catgut sutuers. —*Centralblatt fuhr Chirurgie*, July, 1893.

**British Interest in Chicago Water.**—The *North American Practitioner* pointedly suggests that while thankful for the British interest taken in the question of the water supply in the World's Fair city, yet there are good cruising grounds for the *Lancet* and *British Medical Journal* Commissions nearer home.

The *Practitioner* suggests that American sympathy should be extended to England, as the following distressing condition shows:

*Ashton-under-Lyne*, June 15th.—The Waterworks Committee decided to curtail the supply on and after June 19th. The population to be supplied is 200,000, and there was on June 15th only thirty-five days' supply in store.

*Bakewell*, June 10th.—The reservoirs are very low, and the supply is cut off at night.

*Birmingham*, June 9th.—Notice issued by the Mayor that the available sources are so greatly reduced that it may be necessary to limit the supply and to discontinue street watering.

*Devonport*, June 16th.—The Water Company have notified the military authorities that they cannot continue full supply, and must cut it off from 6 P. M. to 6 A. M.

*Launceston*, June 14th.—Water supply very short.

*Macclesfield*, June 17th.—The Water Committee recommend the greatest care in the use of water; the reservoirs being low.

*Manchester*, June 20th.—Supply shut off from 8 P. M. to 5 A. M., the entire storage ("of what might fairly be called good water") being enough for forty to forty-five days. Street watering was stopped, with the result of much injury from dust, and bad smells from the gulleys, but well water has subsequently been utilized for that purpose.

*Penzance*, June 14th.—Reservoirs emptying rather rapidly, and supply to be shut off earlier than usual.

*Whitchurch*, June 8th.—The local board issued a notice prohibiting all washing of footbaths and yards, and watering of gardens, with the town's water, and threatening prosecution for any breach of the notice.

**Transmission of Epithelial Tumors to White Mice.**—At the French Academy of Sciences M. Verneuil read, in the name of M. Henri Morau, a very interesting observation on the evolution of certain epithelial tumors in white mice. The experiments were made during the five years from 1888 to 1893. In 1888 M. Morau placed in the right axilla of a white mouse a tumor of the size of a hazel nut, which under the microscope showed the characteristics of an epithelioma of the cylindrical type. This neoplasm has now been transmitted to seventeen generations of mice. In those inheriting, the tumor is still reproduced, but less constantly, and less quickly than at the commencement. In new and healthy animals the inoculation reproduces less quickly and less often, as if the inoculable principle were becoming attenuated.

After giving in detail some control experiments, M. Morau gives the following conclusions, which are of great interest, for it is confirmative of the clinical facts already observed in the march and evolution of these neoplasms:

1. Cylindrical epithelioma of white mice is transmissible to animals of the same species, by inoculation and by ingestion.
2. Heredity plays an important rôle in the development and evolution of these tumors.
3. Traumatism hastens and favors their generalization; and also gestation and accouchement.
4. These tumors produce poisons which, absorbed in the organism, retard deterioration and cachexia.
5. These tumors seem to lose their virulence in the measure in which they are evolved in new animals, but always in the same species.
6. So long as these tumors are not ulcerated they are not invaded by microbes.—*Gazette Medicale de Paris*, July 15.

**A Novel Competition for Nurses.**—In the course of the discussion on Nurses' Homes which took place at the International Congress at Chicago, Dr. Billings, the president, expressed the view that it was about time that women manifested the latent power claimed for them in a practical and definite form. He pointed out, for example, that it had been left to man to design and erect homes for nurses and training school buildings. Architects and male experts had exhausted their ingenuity in designing such buildings, and he thought that Congress was a very appropriate platform which to invite the exhibition of woman's latent power by urging the superintendents to elaborate plans and enumerate each item which a model nurses' home and training school should contain. The following details of the proposed competition will no doubt be of interest:

ATTACHED TO A HOSPITAL OR UNDER SEPARATE MANAGEMENT.

Two prizes, namely, a first prize of $75 (£15), for the best plan sent in for competition, and a second prize of $25 (£5) are offered by the editor of *The Hospital*, London, England, for competition amongst lady superintendents, matrons and nurses in the British Empire, the United States and the countries of Europe.

Competitors must send in the proposals in typewritten form, which must consist of two parts: (1) A statement setting forth categorically all the rooms and accommodation which are necessary in order to make the proposed nurses' home a model of what such an establishment should be where room is provided for from fifty to one hundred nurses; (2) A second statement and plan prepared in similar form which provides accommodation for from one hundred and fifty to two hundred nurses. Each of these specifications (1) and (2) must be accompanied by plans drawn to a uniform scale, and must explain how the proposed home for nurses can be extended, should the growth of the establishment render such a step necessary.

Conditions.—1. The competitors must send their names and addresses by Nov. 1st, 1893, to Dr. J. S. Billings, U. S. Army, Washington, D. C., and all plans and proposals presented for competition must reach Dr. Billings not later than *January* 1st, 1894.

2. Dr. Billings, Dr. Henry M. Hurd, Superintendent of the Johns Hopkins Hospital, Baltimore. Md., and Miss Sophia S. Palmer, Superintendent of the Garfield Hospital, Washington, D. C., are appointed as the judges of the papers and plans submitted in this competition, and their decision will be final. Should the papers and plans submitted demand such a course, the judges reserve the right of withholding any award.

3. All proposals must be typewritten on one side of the paper only, and all plans must be drawn to a uniform scale of one-eighth inch to one foot.

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MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues and subscription for THE JOURNAL. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, AUGUST 5, 1893.

## THE NATIONAL ASSOCIATION OF MILITARY SURGEONS OF THE NATIONAL GUARD.

The National Association of Military Surgeons will meet in Chicago next week. Among their number will be found many from the army who have seen service in the last war, and others who have served in the Indian campaigns. Naval medical officers will be there who have had years of arduous service at sea; Marine Hospital officers who have fought epidemics at close quarters; guardsmen who have served on one side or another during the Civil War and young guardsmen who are ready to be mustered into active service whenever they may be needed.

It is a gallant and accomplished body of medical officers, and that they now have an organization, is due to PROFESSOR NICHOLAS SENN, Surgeon General of the Illinois National Guard, then Surgeon General of Wisconsin. Order is coming into the organization, and when their aims are fully accomplished, the NATIONAL GUARD will be officered by a corps of medical men, in no respect inferior to their colleagues in the Public Service. Much legislation is needed, before all the States provide for suitable examinations before appointment, but the sentiment that the Association is creating will soon compel it. The scientific character of the meetings is yearly improving.

There is some talk of asking the AMERICAN MEDICAL ASSOCIATION to establish a new Section of Military Surgery and Hygiene, but we are not aware of any definite steps to that end. As the constitution of the ASSOCIATION will be under discussion at the San Francisco meeting, this would seem a favorable time to act in the matter.

## LEGISLATION FOR THE PREVENTION OF BLINDNESS.

To devise means by which the number of the unfortunate who people our blind asylums may be lessened, is a noble aim; the prevention of blindness is a question which interests the humanitarian and the political economist alike, for the ever increasing number of blind people is a living burden upon the State, and as there are always people who see in legislation a panacea for all evils it is not astonishing that the legislative machinery has lately been set into motion against the evil of blindness. Statistics show that one-third of the inmates of the blind asylums have lost their sight by blennorrhœal ophthalmia in infancy while, on the other hand, the oculists maintain that if this disease is seen and properly treated at the outset, the eyes can be saved in almost every instance, the law makers concluded that if all cases of ophthalmia in the new-born could receive early and proper treatment the number of blind children would be materially reduced. This is perfectly sound logic; but how did they propose to put it into practice?

The New York act for the prevention of blindness (which has served as a pattern for similar laws in other States) prescribes that nurses and midwives should report at once to some legally qualified practitioner any suspected case of ophthalmia in a newborn infant. We must confess our utter inability to understand how a law of this kind shall prove of any practical benefit. It would take the case out of the hands of an ignorant midwife or nurse and turn it over to a physician who may be just as incompetent to manage the case intelligently and successfully; for this law does not require specifically that the legally qualified practitioner to whom the case shall be reported, shall possess the necessary knowledge and experience to treat this disease intelligently, and if the law takes it for granted that every physician has this knowledge and skill, it commits a fatal mistake; for if the experience of those best qualified to give an opinion is correctly reported to us, it would seem that most practitioners are not competent to manage a case of ophthalmia neonatorum; therefore we are convinced that the statistics of blindness will not be altered one iota by such laws as have been enacted, unless every physician is required to give particular attention to, and show his ability in the treatment of this very important disease.

But if we wish to prevent blindness by legislation, it would seem far more rational to act upon the principle that an ounce of prevention is worth a pound of cure. If we can prevent the outbreak of ophthalmia neonatorum we have surely a far better guarantee for saving the eyes of the infants than if we allow the disease to develop and then try to cure it. Now well authenticated reports leave no room for doubting the efficacy of the prophylactic treatment suggested by PROF. CRULE, of immediately washing the eyes of the newborn infant and dropping into them a few minims of a 2 per cent. solution of silver nitrate. He and his followers have succeeded in banishing ophthalmia neonatorum almost entirely from their wards, and if these silver instillations are, as we are assured, perfectly harmless, there is no valid reason why they should not be made obligatory. As the compulsory vaccination has saved hundreds of thousands of men from the ravages of small-pox, so might the compulsory prophylactic treatment (which requires no special skill and can be carried out by any physician or nurse or midwife) of the eyes of the newborn infant save thousands of eyes from the ravages of ophthalmia neonatorum, and effectually close one of the most prolific sources of blindness.

### *THE ACTION OF PILOCARPINE ON BODILY TEMPERATURE.*

Any scientific investigation of the physiological action of a drug is always welcomed by the profession, and this is especially true when opinions of various investigators are at variance. Some investigators claim that pilocarpine lowers the body temperature, while others assert with equal positiveness that it increases it.

With a view to furnishing evidence which might settle this question, or at least to determine how the heat processes are affected to bring about alterations in temperature, PROF. EDWARD T. RECHERT, of the University of Pennsylvania carried on a series of experiments upon five dogs. His conclusions are interesting and valuable and are as follow:

1. Pilocarpine first increases and then decreases bodily temperature.

2. Heat production and heat dissipation are first increased and then diminished. Heat production is the process primarily affected, the alterations in heat dissipation following and being dependent upon the effects upon heat production, excepting after very large doses, when heat dissipation may be depressed even more than heat production during the stage of lessened heat production.

3. The alterations in temperature are dependent essentially upon the actions on heat production, but may be affected by sweating, and after very large doses by alterations in heat dissipation.

The primary increase of temperature is due primarily to an increase of heat production, but after very large doses this increase may be exaggerated and continued by a diminution of heat dissipation which is greater than the depression of heat production.

The decrease of bodily temperature is due to a diminution of heat production, but may, in part, be due to sweating.

4. The actions on the process of heat production are so much more potent in their effects on temperature than those on the sweat glands, that it is doubtful if the latter ever plays an important part in the temperature alterations.

5. Bodily temperature may be increased during the stage of diminished heat production, owing to the greater depression of heat dissipation.

6. The amount of increase and decrease of temperature and the duration of each of these periods are essentially in direct relation to the dose.

### MALPRACTICE CASE.

This word has no charm for a physician's ears. Still he is very much interested in knowing what the courts have to say upon the subject. The latest reported decision touching it, and one too of considerable importance, is that of the Supreme Court of Iowa, in PECK v. HUTCHINSON. This action was brought against a physician and surgeon, who, it was asserted, held himself out as especially skilled in the treatment of diseases of the eye, and was therefore employed and undertook to treat a diseased eye, *when he negligently resorted to a surgical operation*, instead of using proper medical treatment, and, in performing the operation negligently used a large knife, instead of an instrument adapted to that purpose; and also, it was said, negligently and unskillfully undertook a painful operation on the eye without first giving the proper drug to render the patient insensible to pain, so that by the latter wincing, he negligently and unskillfully cut a long gash in and about the "sight" of the eye, which he left without proper treatment.

A correct statement of the law as to what is required of physicians and surgeons, the court said, is that they are required to use ordinary skill and diligence—only the average of that possessed by the profession as a body, and not by the thoroughly educated only, having regard to the improvements and advanced state of the profession at the time of the treatment. And the defense, which was attempted to be made, that no payment was received for the services rendered, and that where the services are rendered as a gratuity, gross negligence or willful negligence or want of skill will only create a liability, the court further said, was clearly wrong; for it could discover no good reason why the degree of care to be used by the physician or surgeon should be less in case his services are gratuitously rendered. Moreover, in the absence of an express contract in such cases, the law implies that the physician or surgeon shall be compensated for his services, and in the absence of any express contract touching compensation, as the law implies a promise to make compensation, the physician or surgeon must exercise skill accordingly in rendering his services, though in fact he may never be compensated. Two other points in the decision are also to be noticed: The reading from an old edition of a medical work to show what is proper treatment, the court held to be a harmless error, when the evidence clearly showed what the modern practice is. And, lastly, evidence tending to show that a disease from which the patient was suffering generally resulted in the loss of the eye, was held admissible in defense of a charge of malpractice as above. The court therefore reversed the decision of the lower court and remanded the case for a new trial.

## MASSACHUSETTS SANITARY EXHIBIT.

The exhibit of the State Board of Health of Massachusetts in the Bureau of Hygiene and Sanitation in the Anthropological Building at the World's Columbian Exposition is one that should be examined by all interested in sanitary work. It shows the various lines of work done by the Board as well as the results of special investigations.

In the principal court may be found:

Diagrams and charts illustrating the general work of the Board upon Life and Health, Diseases and Epidemics, Vital Statistics and Comparative Mortality. This exhibit includes maps and charts showing the distribution of deaths by townships and by different diseases, the influence of density of population on mortality from several diseases, the distribution of births, marriages and deaths by months, and the results of investigation into the causes of several epidemics of typhoid fever in Massachusetts.

The Lawrence Experiment Station is very completely represented by many samples of sands, gravel, sewage, water, filtered sewage and filtered water, together with photographs and a model showing the arrangement of the filters, laboratories, *et cetera*. Several pieces of apparatus used in the chemical and bacterial laboratories are also shown. This station at Lawrence, Mass., was established in the fall of 1887 by the State Board of Health for experimenting, on a large and complete scale, upon the purification of sewage and water by filtration through sand and other substances, and is the first of the kind in America.

The Department of Food and Drug Inspection shows samples representing some 50,000 samples examined since 1882 of injurious or fraudulent adulterations found in Massachusetts, with diagrams showing the decrease of adulterations since the work of inspection was begun. Models are shown of trichinæ, with charts illustrating the decrease of trichinosis in Massachusetts.

Maps and figures are given showing the results of long continued examination by the Board of the public water supplies of the State. Samples are also shown of Massachusetts waters.

A full set of the reports of the Board since its organization is exhibited, together with many blanks and circulars used in the regular work.

In the annex adjoining the main pavilion may be found photographs and plans of public works illustrating some of the practical results of the scientific investigations of the board, including the sewage filter beds at Framingham and Marlborough for purifying the entire sewage of these towns; sewage precipitation works at Worcester, the largest of the kind in this country; the metropolitan sewage system, which is to form a connected system of sewers for Boston and the cities and towns immediately surrounding it; and the filter bed, now nearing completion, for the purification of the water of the Merrimac river to supply the city of Lawrence—the first large filter of the kind in America. This bed covers two and one-half acres and will filter at the rate of five million gallons per day.

A table and maps are given, showing the towns and cities which have been advised by the Board in regard to water supplies and sewerage systems.

Near by the exhibit of the State Board of Health, is a model and map of the water supply system of the city of Boston, showing the different water sheds included. A set of photographs of the different reservoirs is also shown.

Massachusetts has been more liberal in its appropriations to the State Board of Health than any other State in the Union, and as a result the work accomplished in many respects is better than any done anywhere else in the civilized world.

This exhibit is an object lesson well worthy of study by other States, as owing to the increased density of population and increase of manufacturing wastes, our water supplies are annually becoming more polluted, and the necessity for such work, more and more imperative.

## A PROPOSED NEW MEDICAL HOME.

The *Brooklyn Medical Journal*, July, states that a very important meeting has recently been held in Brooklyn, the outcome of which may be expected to be the erection of a building wholly devoted to the interests of the medical profession. Dr. C. N. Hoagland, the liberal founder of the beautiful laboratory existing at that place, has agreed to give largely to this project if the physicians of his city can be unified and brought in under the same roof. He stands ready to give not less than $50,000, if the like sum can be raised from other sources by the profession. A sub-committee of the meeting above referred to has in charge the duty of presenting the project before the various medical societies, about a dozen in number, which will need to take up the subject favorably before the philanthropic donor can move further in the matter.

## NEW INEBRIATE ASYLUMS.

A company has been formed, of which Dr. C. H. Hughes of St. Louis, is one of the principal promoters, to establish sanatoria in several principal cities of the country, solely for the treatment and cure of inebriety, with a view of having them managed by thoroughly educated neurologists under one general management. The sanatoria are to be managed according to business methods that will meet the approval of the regular profession.

## SOCIETY NEWS.

**American Medical Association.**—The majority report on the new Constitution was not adopted at Milwaukee, as the matter was postponed until next year, when all amendments and the minority report will be in order for discussion. The question of army and navy representation, we are assured by certain members of the committee, will be adjusted on a basis satisfactory to the three medical services, and no one need fear but that their wishes will be fully met.

**Tri-State Medical Society.**—The President of the Tri-State Medical Society of Alabama, Georgia and Tennessee has appointed Drs. A. W. Boyd, E. E. Wise and G. Manning Ellis on the Executive Committee to arrange for the next annual meeting, which will be held in Chattanooga, beginning Tuesday, October 17.

The following sub-committees have been appointed:

Exhibits: Frank Trester Smith, B. S. Wert and Wm. Nolan.

Hall and Hotels: G. Manning Ellis, B. F. Travis and E. A. Cobleigh.

Transportation: E. B. Wise, G. A. Baxter and H. Berlin.

At a recent meeting of the Executive Committee it was decided to limit the number of subjects so as to give scope for a fuller discussion. Prominent men will be invited to treat of a given subject, each writing of a single phase and not endeavoring to cover the whole ground. This will not exclude volunteer papers, which will be welcomed as heretofore, but will be grouped with those of kindred subjects so that all of a kind may be discussed together.

**Congress of Education.**—The opening ceremonies of the General International Congress of Education was held Tuesday afternoon, July 25th. A reception was held in the evening. The receiving party were the general officers of the World's Congress Auxiliary, and the general officers of the Woman's Branch, assisted by the Commissioner of Education of the United States, and the officers of the National Educational Association, and the General Educational Committee.

**The Pan-American Medical Congress.**—SECTION ON MILITARY MEDICINE AND SURGERY.—*Preliminary Program.*—The executive president requests the honorary presidents, advisory council and secretaries of the Section, to meet him at the Hotel Richmond, Washington, D. C., on Monday evening September 4, at 8 P. M.

On Tuesday, September 5, from 3 to 6 o'clock P. M., an informal meeting of the Section will be held at the Army Medical Museum for the purpose of inspecting the collections contained in this Museum and the Library of the Surgeon General's office.

On Wednesday, September 6, the regular sessions of the Section will commence at 11 A. M. The address of the executive president will first be read. Short addresses by the honorary presidents will then be in order. A paper on "Laparotomy in Gunshot Wounds of the Abdomen" will then be read by Prof. P. S. Conner of Cincinnati. This paper will be discussed by several prominent surgeons.

The afternoon session will be devoted to a demonstration of the Hospital Corps drill by a detachment under the command of Major John Van R. Hoff, Surgeon United States army; also to an exhibition of a field hospital complete, with equipment now in use in the United States army; followed by a discussion upon first aid to wounded, transportation of wounded men from the battlefield, and field hospitals.

On Thursday, September 7, the morning session will be devoted to reading papers in the English language; the afternoon to papers and discussions in Spanish. One of the honorary presidents of the Section familiar with the Spanish language will be invited to preside.

Friday morning September 8, will be devoted to the reading of papers.

The meetings of the Section will be held in the lecture room of the National Museum Building.

Headquarters of the Section at the Hotel Richmond, corner of Seventeenth and H Streets, N. W.

GEO. M. STERNBERG, *Executive President.*

**Pan-American Medical Congress.**—*Committee of Arrangements,* Washington, D. C.: Samuel S. Adams, M.D., chairman; J. R. Wellington, M.D., secretary; G. L. MaGruder, M.D., treasurer.

*Executive Committee:*—Dr. Samuel S. Adams. chairman; Surgeon Generals, Geo. M. Sternberg, U.S.A.; J. Rufus Tryon, U. S. N.; Walter Wyman, U. S. M. H. S.; Drs. S. C. Busey, G. Wythe Cook, Carl H. A. Kleinschmidt, H. L. E. Johnson, Llewellyn Eliot, H. H. Barker, C. W. Richardson, W. Sinclair Bowen, George S. Ober, G. L. Magruder, J. R. Wellington, and John R. Walton, D. D. S.

SUB-COMMITTEES.

*Reception:*—Dr. S. C. Busey, chairman; Surgeon Generals, Geo. M. Sternberg, U. S. A.; J. Rufus Tryon, U. S. N.; Walter Wyman, U. S. M. H. S.; Drs. J. Ford Thompson, Charles Hagner, Louis Mackall, J. Taber Johnson, T. Morris Murray, G. Byrd Harrison, and Jos. H. Bryan.

*Entertainments:*—Dr. G. Wythe Cook, chairman; Drs. G. N. Acker and Thos. E. McArdle.

*Registration:*—Dr. Carl H. A. Kleinschmidt, Chairman; Drs. John S. McLain and Johnson Eliot.

*Railroads:*—Dr. H. L. E. Johnson, chairman: Drs. E. L. Tompkins and J. Foster Scott.

*Printing:*—Dr. Llewellyn Eliot, chairman; Drs. Thomas N. Vincent and F. B. Bishop.

*Halls and Exhibits:*—Dr. H. H. Barker, chairman; Dr. J. T. Winter and C. M. Buchanan.

*Ways and Means:*—Dr. C. W. Richardson, chairman; Drs, John Van Rensselaer, Wm. Dillenback, Henry B. Deale, and Wm. Compton.

*Information:*—Dr. W. Sinclair Bowen, chairman; Drs. E. Oliver Belt and F. S. Nash.

*Hotels:*—Dr. Geo. S. Ober, chairman; Drs. Wm. E. Handy and D. O. Leech.

**Delegates to the Pan-American Medical Congress.**—Gov. Boies of Iowa, July 26, appointed the following delegates to the Pan-American Medical Congress: Donald MacRae, Council Bluffs; J. W. Holliday, Burlington; Jennie McCowan, Davenport; B. H. Riley, Dallas Center; W. B. Kibbey, Marshalltown; W. Smouse, Des Moines; George Allen Staples. Dubuque; A. C. Jones, Breda; G. S. Bagley, Des Moines; L. B. Matoon, Elgin; Harriet Mallon, Waterloo; F. W. Cram, Sheldon; James D. Reynolds, Creston; J. F. Kennedy, Des Moines; R. C. Hoffman, Oskaloosa.

**International Congress of Public Health.**—The second address of this Congress has been issued.

This Congress will be in session in the Art Institute Building, Chicago, October 9–14, 1893.

Membership in the Congress is open without fee to all persons interested in public health, who comply with the formalities of registration.

The proceedings will be published by the American Public Health Association, and will be distributed to all members of the Congress who, on the payment of five dollars and election, may become members of the American Public Health Association. This payment of five dollars entitles the member to a copy of the proceedings; is the only fee required, and is entirely voluntary.

Registration may be conducted in person or by correspondence, and it will facilitate the work of the Congress for this to be accomplished as early as possible. To that end an officer will be present in the Art Institute to attend to registration every day during the preceding week, October 2–7, from 9:00 to 5:00 o'clock, and again on Monday, October 9th, during the same hours. Registration may also be accomplished later, according to placards in the hall.

Correspondence on this subject may be addressed to "The Registration Clerk, Public Health Congress, Art Institute, Chicago." Checks should be made payable to the Treasurer American Public Health Association.

Registration consists in recording the name, including designating titles; the official representation, if any; the permanent residence; and the local address (this may be omitted or changed at discretion). The particular section the member wishes to work with should also be noted. No charge is made for registration.

Special business meetings of the American Public Health Association will be held each morning, including Monday, October 9th, and also at 4:00 P. M. Monday, October 9th, for the election of members.

The opening session of the Congress will be held in one of the large halls of the Institute, at 8:00 P. M., Monday, October 9th, and will be devoted to addresses of welcome by the president of the World's Congress Auxiliary, by the mayor of Chicago, and by the president of the American Public Health Association, and to responses by foreign delegates. These will be followed by the inaugural address by the president of the American Public Health Association.

The mornings of Tuesday, Wednesday and Thursday, from 10:00 to 12:00 o'clock, will be devoted to discussions in general of the meetings of the Congresses upon the following topics:

Tuesday—Diseases chiefly manifested in the air passages: tuberculosis, diphtheria, pneumonia, their prevention or control through public health service.

Wednesday—Disease affecting the alimentary canal: the diarrhœa of childhood; cholera; enteric fever.

Thursday—The eruptive fevers: smallpox, measles, scarlet fever, and the diseases of modern life due to nervous conditions.

Friday morning will be given up to a business meeting of the American Public Health Association.

The general meeting of Saturday morning will close the Congress.

The afternoons of Tuesday, Wednesday, Thursday, and if necessary Friday, will be devoted to the work of the Congress by sections as follows:

1. International, National and State Hygiene: Its methods and regulations, including Vital Statistics. ("State" as here used, indicates an autonomous part of a nation, as a kingdom of the German Empire, an integral State of the American Union.)
2. Municipal Health Service. To include the control of the infectious diseases of men and animals, offensive trades, water supply, the disposal of excreta, garbage and the waste of manufactories, schools and public assemblages.
3. The Infectious Diseases of Men and Animals: their causes, prevention and control.

There will also be general meetings of a popular character at 8 P. M. on Tuesday, Wednesday and Thursday, when addresses will be delivered on public health subjects of general interest. The object of these is to disseminate general information on such subjects as: The prevention of infectious diseases; the causes of ill-health due to soil, air and water; the health and sickness of self-supporters (workers).

All papers that are offered must be received by the "Secretaries of the Public Health Congress, Chicago, Ill.," before September 15th, 1893, and titles and abstracts of these by September 1st.

The president of the American Public Health Association, which embraces the Dominion of Canada, the Republic of Mexico and the United States, will be the president of the Congress.

Honorary presidents will be appointed from other countries.

Dr. John H. Rauch, chairman; Dr. F. W. Reilly, vice-chairman; Dr. F. W. Brewer and Dr. C. N. Hewitt, joint secretaries.

*General Committee of the World's Congress Auxiliary on a Public Health Congress:* Dr. E. Garrott, Dr. J. M. Hall, Dr. J. B. Hamilton, Col. Bernard J. D. Irwin, M. D., U.S.A., Dr. S. J. Jones and Dr. A. R. Reynolds.

*Woman's Committee on a Public Health Congress:* Dr. Sarah H. Dayton, Chairman; Dr. Sarah Hackett Stevenson; Dr. Eliza Root and Dr. Julia Ross Low.

The American Public Health Association has appointed the following Committee of Coöperation for the World's Public Health Congress of 1893:

Dr. John H. Rauch, chairman, Chicago, Ill.; Dr. Charles N. Hewitt, secretary, Red Wing, Minn.; Dr. Samuel W. Abbott, Wakefield, Mass.; Dr. A. N. Bell, Brooklyn, N. Y.; Dr. Peter H. Bryce, Toronto, Ont.; Dr. H. D. Fraser, Charleston, S. C.; Dr. Lucien F. Salomon, New Orleans, La. and Lt.-Col. Alfred A. Woodhull, M. D., U.S.A., Hot Springs, Ark.

**The American Electro-Therapeutic Association** has issued the following circular:

*To the Fellows of the American Electro-Therapeutic Association:*—The next annual meeting of the Association will be held in Chicago, Sept. 12, 13 and 14, 1893.

*Committee of Arrangements:*—Chairman, Dr. Franklin H. Martin, Venetian Building, Chicago; Secretary, Dr. S. C. Stanton, 3537 Indiana Avenue, Chicago.

1. Will you attend the next meeting? If so, write to the secretary of the Committee of Arrangements in Chicago, to secure rooms.
2. Will you read a paper? If so, please send title to the secretary of the Association.
3. Have you any new members to propose? If you have, application should be sent to the secretary, with two signatures of members recommending the candidate.
4. Send any change of address to the Secretary.

MARGARET A. CLEAVES, M.D., *Secretary.*

68 Madison Ave., N. Y.

**The American Medical Editors** will have a meeting and banquet in Washington on the evening of Monday, September 4, the day preceding the assembling of the Pan-American Medical Congress.

Dr. I. N. Love, of the *Medical Mirror,* 3642 Lindell Avenue, St. Louis, has been appointed chairman of the Committee of Arrangements for banquet, which fact gives ample assurance of the success of the latter.

It is earnestly hoped that every medical editor of all of the Americas will endeavor to be present on the interesting occasion. Please address the chairman of Committee of Arrangements promptly.—*Alienist and Neurologist,* July, 1893.

**National Association of Military Surgeons.**—We will publish the president's address and an abstract of the proceedings in our next issue.

## DOMESTIC CORRESPONDENCE.

### Prostatic Hypertrophy.

*To the Editor:*—I have read the editorial on "Prostatic Hypertrophy" and desire to indicate my pleasure in reading it. Paper surgery of that sort does much good. It puts us to thinking. How many have gone down under prostatic hypertrophy and its sequelæ who might have been saved had the remedial powers of surgery with the knife been invoked. Time has been wasted in the study of catheter fever and quibbling as to the nature of the growth. Sir Andrew Clark would have conferred a blessing on *male* kind ten years ago if instead of his learned disquisition on "catheter fever and its causes," he had referred the patient to a surgeon.

There is need, however, for more aggressive work on the prostate. It must be attacked earlier. A dissection of the perineal and external aspects of the prostate without opening the urethra does good if applied before the vesical symptoms have fully developed. The vascular supply of the gland is interrupted by this means and it withers in consequence, and the disturbance of micturition disappears. A *perineal cystotomy* with the cystotomy left out will afford great relief and cure the patient before his bladder is diseased. The dangers are almost nil because the great source of sepsis, the fetid urine, can not touch the wound if it is well packed with iodoform gauze until it heals from the bottom. Open the perineum by the bilateral section, proceed as though you intended to enucleate the prostate, but don't. Dress as above described, and the results will prove satisfactory in most instances.

HAL. C. WYMAN.

## Medical Practice in Colorado.

DENVER, COL., July 24, 1893.

*To the Editor:*—I should be glad to have you publish the following regarding our present Colorado law:

Hereafter the Colorado State Board of Medical Examiners will recognize only diplomas from three year schools as entitling their holders to license. The courses of lectures must have been of at least twenty weeks each, and given in three separate years, and a preliminary examination must have been required. Instruction must have been given in anatomy, chemistry, physiology, pathology, materia medica and therapeutics, obstetrics and gynecology, surgery, medical jurisprudence, theory, and practice of medicine and hygiene.

In default of such a diploma the candidate for license must pass an examination in anatomy, chemistry, physiology, pathology, surgery, obstetrics and gynecology, and theory and practice of medicine. Yours very truly,

J. N. HALL, M.D., *Secretary.*

## An Inquiry.

FULTON, N. Y., July 24, 1893.

*To the Editor:*—Will some of your contributors give reasons why venesection is not as useful in relieving acute diseases, viz: pneumonia, *now*, as it was fifty years ago? Also the causes why epistaxis and other hemorrhages in the young, are so uncommon now compared with 1840 to 1870? During that period I was frequently applied to, to arrest nose bleed, more often for the young under 20 years of age. For the last twenty years, I do not remember of being called in a single instance excepting in a few cases of severe exanthematic to relieve nose bleeding. Has the diet, the mode of living, the less physical labor endured, or what has made the difference?

C. G. BACON.

## There are no Classes in the Association—All are Equal and Pay Annually.

*To the Editor:*—Please tell me how long must a paying member continue his dues until he is a life member?

L. K. W. S.

Sparks, Neb., July 26, 1893.

# BOOK NOTICES.

**System of Diseases of the Ear, Nose and Throat.** Edited by CHARLES H. BURNETT, A.M., M.D., Emeritus Professor of Otology in the Philadelphia Polyclinic, etc. Vol. I. Illustrated. Philadelphia: J. B. Lippincott Company. 1893. Pp. 800. Price per vol. in cloth, $6.

Dr. Burnett has produced a valuable and practical book. It consists of monographs upon the various subdivisions of these subjects by twenty-three writers. They aim to give practical conclusions arrived at by other investigators and by themselves aside from theories.

There are two volumes. The first is devoted to the ear, nose and naso-pharynx; and the second to diseases of the pharynx and larynx. The purpose has been to make this work a complete, exhaustive and authoritative treatise with special reference to diagnosis and treatment.

Dr. H. Richards describes the instruments and methods of examination of patients with diseases of the ear. Too much space is given to the old, to the exclusion of the new and important instruments and methods. Fig. 14 illustrates "Politzer's method of inflation of tympana." It represents the forcing of a column of air upward in the direction of the nasal duct, instead of horizontally backwards, as it ought to be, in a line with the orifice of the Eustachian tube. It is plain that a jet of air, like a jet of any gas, or water, should be propelled in the direction of the tube through which it is intended to pass, and such an error as is perpetuated here should be eliminated from a work of this character. Fig. 18 illustrates catheterization. The Politzer air bag is fitted directly into the catheter, without any intervening soft rubber tubing, as it is done in Vienna. Many American aural surgeons have used for years an improvement on this method that saves the patient much unnecessary suffering. It consists of interposing a soft rubber tube between the air bag and the catheter tip. By this means the pain-producing, jerking motion imparted to the catheter with each compression of the bag is prevented. These improvements are important and should be recorded, especially those made by our own countrymen, and they are many. The great strides made in improvements in compressed air apparatus and instruments as employed in Berlin, New York and Chicago are not mentioned in this paper.

Dr. G. Bacon's paper on acute inflammation of the middle ear is full of excellent advice and good sense. He is to be commended for condemning the universal practice of taking large doses of quinine for "colds in the head," especially when the ear is involved. He is one of the very few writers who properly pleuralize the Latin name for drumheads (membranæ tympanorum). He sensibly discountenances the use of the Valsalvan and Politzer methods by patients. They usually do themselves more harm than good. His paper is illustrated by seven colored drawings.

Dr. S. Sexton writes on chronic catarrh of the middle ear. He treats the subject with special reference to the removal of two larger ossicles. The operation is described and strongly recommended. Nothing is said of the deplorable results that sometimes follow this operation—suppuration, vertigo, apparently intensified tinnitus, reproduction of the drumhead and total deafness. Both sides of this question have been fairly and impartially presented in the meetings of the otological section of the American Medical Association, and one naturally looks for the same here.

Dr. C. J. Colles has an exceedingly valuable contribution on the middle ear affections due to the various dyscrasias. It evidences painstaking and exhaustive research.

Dr. R. Barclay gives the best description of fungoid growths of the ear that we have ever seen. There are twenty-five pages, well illustrated, on this subject alone.

Dr. C. H. Burnett's paper on chronic suppuration of the middle ear is a thoroughly practical one. He describes minutely the operation for incision of the hammer and anvil, and is in accord with the best authorities in advising this procedure in the very intractable cases. His statement that peroxide (dioxide) of hydrogen is decomposed by warming it before putting it in the ear is a mistake. At the temperature of the blood the efficacy of a good $H_2 O_2$ is retained, and it is conducive to the comfort of the patient. While he does not endorse Stacke's operation for opening the attic and antrum and excision of the ossicles, he gives a brief but clear account of it. This procedure is about to be tried by Toeplitz and others of New York, and it has been done recently in Chicago, with successful results, by the aural surgeons of the Illinois Charitable Eye and Ear Infirmary. It is one of the most difficult and dangerous operations in surgery.

In Part II, Dr. A. W. MacCoy has a beautifully illustrated article on the anatomy and physiology of the nose and pharynx.

Dr. C. Wagner's paper on the treatment of the nose and throat is of great practical value to the general practitioner. Yet it is regrettable that he endorses the use of the abominable nasal douche. In recommending the use of pyoktannin (which kind?) in sprays and powder, he omits the necessary warning regarding its intense staining property—yellow or violet.

Laryngologists will be surprised to find in the first line of Dr. Bosworth's paper on acute rhinitis the word he has so uncompromisingly condemned—catarrhal. He has reversed the generally accepted theory that chronic nasal catarrh results from repeated attacks of cold, for he states that "the chronic inflammation develops primarily, and the recurrent attacks of acute rhinitis become the prominent symptom of the chronic affection." This has the merit of originality. Here is comfort for the poor: "An excess of clothing involves a greater risk to health than a deficiency." The doctor wisely prefers woolen underclothing, and recommends that it be worn and laundered wrong side out by those who have irritable skin—a good suggestion.

**The Law of Cremation:** An *Outline* of the Law relating to Cremation, Ancient and Modern. By Aubrey Richardson. Cloth, 16mo., pp. 182. London: Reeves and Turner. 1893.

"Some three years ago," says the author, "at the Medical Society of London, a discussion arose on a paper on the subject of cremation read by my father, Dr. Benjamin Ward Richardson, F.R.S., whether a person could determine for himself as to the mode of the disposal of his remains after death, and whether or not such disposal was entirely in the hands of his executors." Becoming interested in the question, the author collected information from various countries, and this book, interesting alike to the legal and the medical profession, is the result. The historical chapter, which opens with an account of the ancient law, is perhaps the most interesting of any. In the section devoted to the United States, due mention is made of Dr. LeMoyne's crematorium at Washington, Pa., and an opinion of Judge Ewell is quoted at length. An interesting account of the attempt to cremate the remains of General Garibaldi is given. We commend the book.

**A Text-Book of Medicine,** for Students and Practitioners. By Dr. Adolf Strumpell, Professor and Director of the Medical Clinic at Erlangen. Second American Edition, *translated* by Herman F. Vickery, A.B., M.D., and Philip Coombs Knapp, A.M., M.D., with Editorial Notes by Fredrich C. Shattuck, A. M., M.D. With 119 Illustrations. 8vo., 1,043 pages, cloth, $6. New York: D. Appleton & Co. 1893.

The second American edition of this standard work, thoroughly revised from the sixth German edition, has just been published. This work is so well known to every practitioner of medicine that it needs no extended introduction. The new edition has been thoroughly revised and brought into line with the latest advances in medicine and bacteriology. In many cases the details of microscopical and bacteriological examination for diagnostic purposes have been so clearly given that a general practitioner may be able without reference to an expert, to make sure of the nature of his case and treat it accordingly. This is noticeably done in the chapters on Malaria and Dysentery, two diseases so frequently met with in practice, and in which the diagnosis is so often in doubt.

Dr. Knapp, one of the translators, has edited the section on Nervous Diseases, and has inserted many notes that add to the value of the section. It is a little singular, however, that no mention is made of the possibility of the identity of Morvan's disease with the anæsthetic form of leprosy, which identity is now strongly suspected by some observers. On the whole, the second edition has sustained the high reputation for accuracy and thoroughness established by the first American edition.

**A Chapter on Cholera for Lay Readers: History, Symptoms, Prevention and Treatment of the Disease.** By Walter Vought, Ph. B., M.D., Medical Director and Physician-in-Charge of the Fire Island Quarantine Station, Port of New York, etc. Illustrated with colored plates and wood-engravings. In one small 12mo volume, 110 pages. Price 75 cents: Philadelphia: The F. A. Davis Co.

This book is a timely one, and well calculated to instruct the general public on the nature of the disease and its prevention. We heartily commend it.

**Letters from a Mother to a Mother on the Care of Children's Teeth.** 16mo paper. Philadelphia: Wilmington Dental Mf'g Co. 1893.

This book is the fourth edition of an excellent treatise intended for popular information on a much neglected branch of hygiene.

**Sterility in the Woman and its Treatment.** By Dr. De Sinety. Translated by E. P. Hurd, M.D. Paper, 16mo. Detroit: George S. Davis. 1893.

This is a book by a well known authority and well translated. Some abridgement has been made in the chapters on Abortion and Extra-uterine Pregnancy. The book is worthy of being bound in something better than paper.

# MISCELLANY.

**The States May Quarantine.**—Lansing, Mich., July 31.—The United States Court has denied the application of the Minneapolis, St. Paul and Sault Ste. Marie for an injunction to restrain the State Board of Health from enforcing its regulations relative to the inspection and disinfection of immigrants at the Michigan border, thus effectually disposing of the objections made to such regulations by the railroads on constitutional grounds and establishing the right of the States to enforce regulations in addition to those of the United States Marine Hospital service.—*Chicago Tribune.*

**Texas Medical Journal.**—Dr. S. E. Hudson, has become associated with Dr. F. E. Daniel, in the proprietorship of this journal. The name has been changed from *Daniels' Texas Medical Journal* to that by which it will hereafter be known of the *Texas Medical Journal.*

**Instance of Longevity.**—Mrs. Katherine Hernon died at the county almshouse at Lincoln, Ill., July 30, 1893. She was 103 years of age and a native of Ireland. She came to this country during the service of John Adams, second president of the United States, and outlived all her descendants except grandchildren, who neglected to provide for her. She was believed to be the oldest person in Illinois.

**North American Practitioner.**—Dr. John H. Hollister, for several years editor of the Journal has taken the editorial chair of the *North American Practitioner.* Those who know him will need no assurance that the course of the *Practitioner* will hereafter run smooth.

**Diphtheria Outbreak in New Jersey.**—A serious outbreak of diphtheria has occurred at Hightstown, New Jersey. The investigations of Dr. A. Clark Hunt, medical inspector of the State Board of Health, who arrived on July 25, showed that eighteen of the twenty cases then existing were in families served by a certain milkman, and it was ascertained that a lad in the employ of the latter was suffering from the disease and had been working in the dairy for several days after it had made its appearance. On July 27 the State Board of Health issued a bulletin stating that Shippen Wallace, State chemist, indorsed the opinion of Dr. Hunt in relation to the origin of the outbreak, and that the sanitary condition of the town was satisfactory.

**New York City Mortality.**—The highest mortality that has been recorded thus far through the summer in New York occurred in the week ending July 22. The number of deaths was 1,257, an increase of 161 over the preceding week, and 214 above the average of the corresponding weeks of the past five years. The increase was chiefly due to diarrhœal diseases among children under five years of age; and the death rate for the week presented an annual death rate of 34.61 per thousand of the estimated population. High as this mortality is, it is considerably smaller than that of the intensely hot weather of July, 1892, when during the week ending July 30, it reached the extreme figure of 1,434.

**Paper Stockings.**—Paper stockings are a new German invention. A Berlin shoe trade journal says that the stockings are made of a specially prepared impregnated paper stock, which, it is claimed, has an extraordinary effect on perspiring feet. The moisture is absorbed by the paper as rapidly as it is formed, and the feet remain dry and warm, while the constant temperature maintained in the shoes is said to be a great preventive of cold.—*Jenness-Miller Monthly.*

**To Obscure the Taste.**—Gymnemic acid is the active principle of *Gymnema sylvestris*, the formula of which is $C_{32}H_{55}O_{12}$. It is a greenish-white powder, having a sharp, acid taste; very soluble in alcohol, but slightly soluble in water and ether. When the tongue is touched with it, the taste is completely lost for sweet and bitter. The subjects of the experiment are incapable of perceiving the taste of quinine or of sugar, while that of acid, salty, astringent or spicy substances is completely recognized. Availing himself of this fact, Quirine recommends, before administering bitter remedies, that the mouth be rinsed with a 12 per cent. solution of gymnemic acid in alcohol and water.

**To Remove Odors.**—The odor of iodoform, creosote or guaiacol may be removed from the hands by washing with linseed meal. Tar water containing oil of wintergreen will remove the odor of iodoform from articles to which it attaches. Powdered coffee will disguise the taste of creosote pills, while burning coffee dissipates the odor of guaiacol or iodoform in rooms.—*Pharmaceutical Era.*

**Lunatics in Jail.**—The *Texas Health Journal* for July says there are more than one thousand lunatics in the Texas jails, on account of alleged lack of room in the asylums for which a parsimonious legislature has made insufficient appropriations. Who is the Texas Holman?

**The Useful Alligator.**—The *Pharmaceutical Era* in speaking of "alligatorine" says: It is a French proposition that the fat of the alligator be employed as a basis for ointments. The fat is saponified by alcoholic potash, the soap decomposed by hydrochloric acid, and the fatty acid mixed with cottonseed oil. It is claimed that the metallic salts of this acid are readily absorbed by the skin.

**To avoid** duplication of payments or complication of accounts, members are respectfully informed that *membership dues* should be sent to the Association Treasurer, Dr. R. J. Dunglison, Lock box 1274, Philadelphia.

*Subscription fees* from gentlemen not members of the Association, should be sent to this office. Address Journal American Medical Association, 68 Wabash Ave., Chicago.

**Wanted,** two copies of the Journal of January 2, 1892, to complete volume for binding.

## LETTERS RECEIVED.

(**A**) Atkinson, W. B., Philadelphia, Pa.; (**B**) Brumbaugh, A. B., Huntingdon, Pa.; Bishop, S. S., Chicago; Cleaves, Margaret A., New York; Cooper, E. B., Sunbury, Pa.; Collins, H. L., St. Paul, Minn.; (**D**) Dunglison, R. J., Philadelphia; Davis, W. S., Minneapolis, Minn.; (**E**) Elliott, A. R., New York; Everett, J. T., Wichita, Kan.; Eagleson, J. B., Seattle, Wash.; (**G**) Griffith & Co., New York, N. Y.; Greene, C. S., San Francisco, Cal.; (**H**) Heath, F. C., Indianapolis, Ind.; (**K**) Katharmon Chemical Co., St. Louis, Mo.; King, J. K., Watkins, N. Y.; (**M**) Marcy, H. O., Boston; Maybury. W. J., Saco, Me.; McBride, J. H., Wauwatosa, Wis.; McGowan, Wm. D., California, Pa.; (**N**) Newman, R. Arlington, Detroit; (**O**) O'Gorman, Jas., Baltimore, Md.; (**R**) Rowell, Geo. P. & Co., New York, N. Y.,; Rio Chemical Co., St. Louis, Mo.; Reynolds, H. T., Baltimore, Md.; (**S**) Smith, Joseph, Kansas City, Mo.; Sawyer, L. K. W., Sparks, Neb.; Smith, F. F., Chattanooga, Tenn.; Stewart, F. E., Watkins, N. Y.; (**T**) The Sanitarium, Battle Creek, Mich.; (**W**) Wyman, W., Washington, D. C.; Webster, Geo. W., Chicago; Wyman, Hal. C., Detroit, Mich.; Warner, W. R. & Co., Philadelphia, Pa.; Welch, S. A., Providence, R. I.

# THE PUBLIC SERVICES.

### Naval Post Graduate Medical School.

The new post graduate school of instruction for surgeons who enter the Navy, established by Surgeon General Tryon, opened at the Brooklyn Naval Laboratory in charge of Medical Director Wells, the first chief of staff of the institution, assisted by a full corps of medical officers of the Navy as instructors.

Dr. Tryon's object in starting the school is to afford young assistant surgeons who enter the Navy a chance to thoroughly familiarize themselves with certain branches of medicine and surgery which they were unable to study in civil life, and to instruct them in the duties which they have to perform on sea-going naval ships.

The school, which opened August 1 at the Naval Laboratory, begins with two scholars who have recently entered the Navy. This building has long been of little use, and has recently been fitted out and adapted for its new use. Soon after assistant surgeons are commissioned they will be ordered to the establishment, and will be required to perform their duties faithfully while undergoing instruction. The course of instruction will continue for a period of at least three months, and will embrace the following subjects: Chemistry, hygiene and sanitary science, microscopy and microbiology, military surgery and operative work, clinical medicine and hospital work, construction and ventilation of modern ships, examination of recruits and life-saving methods, navy regulations, etc.

The students will be expected to visit the naval hospitals, study and investigate diseases as associated with naval life, and the diseases to which sailors are chiefly susceptible. The course will also embrace the general principles of hygiene, causes of disease, methods of investigation and the duties of health authorities.

The record of young officers at the school will be kept and filed away at the Navy Department for reference when an applicant comes up before the examining boards for promotion, and will serve as a guide in a measure, to selecting officers for certain duties.

After completing the course surgeons will be ordered to sea-going ships well equipped to perform the duties of their new life.

**Army Changes.** Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 22, 1893, to July 28, 1893.

Capt. Leonard Wood, Asst Surgeon, is relieved from duty at Presidio of San Francisco, Cal., and ordered to Ft. McPherson, Ga., for duty.

First Lieut. Benjamin L. Ten Eyck, Asst. Surgeon U. S. A., is granted leave of absence for two months, to take effect on or about September 15, 1893, with permission to apply for an extension of one month.

Major Louis M. Maus, Surgeon U. S. A., is granted leave of absence for one month, to take effect when his services can be spared at Ft. Wingate, N. M.

Capt. William B. Davis, Asst. Surgeon, is relieved from duty at Ft. Sam Houston, Tex., and ordered to Ft. Brown, Tex., for duty, relieving Capt. George H. Torney, Asst. Surgeon. Capt. Torney, upon being relieved by Capt. Davis, will proceed to and take station at Philadelphia, Pa., as attending surgeon and examiner of recruits at that place.

Capt. Louis W. Crampton, Asst. Surgeon, is relieved from duty at Ft. Spokane, Washington, and from temporary duty at Hdqrs. Dept. of the Colorado, and ordered to Baltimore, Md., as attending surgeon and examiner of recruits, relieving Capt. Charles B. Ewing, Asst. Surgeon.

**Navy Changes.** Official list of changes in the Medical Corps of the U. S. Navy. for the week ending July 29, 1893.

Surgeon H. J. Babin, to temporary duty at naval station, Port Royal, S. C.

Asst. Surgeon A. R. Alfred, from the "Franklin," and to the "Minnesota."

Asst. Surgeon J. M. Moore, from Norfolk Hospital, and to the "Franklin."

Medical Inspector E. Kershner, to duty on board U. S. S. "New York."

P. A. Surgeon J. F. Uric, to duty on board U. S. S. "New York."

Asst. Surgeon H. D. Wilson, from the "Minnesota," and to the "New York."

Medical Inspector B. H. Kidder, Medical Director H. M. Wells, Surgeon Frank Anderson, P. A. Surgeon Clement Biddle, granted leaves of absence.

The Journal of the
American Medical Association

Vol. XXI. CHICAGO, AUGUST 12, 1893. No. 7.

# ADDRESSES.

## ENTERORRHAPHY; ITS HISTORY, TECHNIQUE AND PRESENT STATUS.

### PRESIDENT'S ADDRESS.

Delivered at the Meeting of the Association of Military Surgeons of the National Guard of the United States, Chicago, August 8, 1893.

BY N. SENN, M.D., Ph.D., LL.D.

President, Association of Military Surgeons of the National Guard of the United States; Professor of Practice of Surgery and Clinical Surgery, Rush Medical College; Professor of Surgery, Chicago Policlinic; Attending Surgeon Presbyterian Hospital; Surgeon-in-Chief St. Joseph's Hospital, Chicago.

A study of surgical literature brings the conviction that the successful treatment by direct operative intervention of injuries and surgical affections of the intestinal tract is one of the most brilliant achievements of modern surgery. Less than fifty years ago many of the most famous surgeons regarded the direct treatment of wounds of the intestines as a *noli me tangere*, under the belief that nature's resources would prove more successful in saving the life of the patient than the surgeon's efforts in closing the wound by artificial means. The intentional infliction of an intestinal wound by the surgeon for the purpose of correcting mechanical difficulties anywhere in the intestinal canal and the removal of life-threatening affections by operative procedure are subjects which have been seriously discussed and extensively practiced only during the last twenty-five years. It is advisable and profitable during the present time that has witnessed such wonderful advancements in surgery to make occasionally a halt in the restless search for new discoveries and novel operations to take a retrospective view of what has been done in the past in certain departments of surgery that have recently been subjected to such complete revolutionary changes. No part of abdominal surgery has undergone more radical changes than the intestinal suture, and in none is the contrast greater between the ancient and modern methods. I have deemed it advisable on this occasion to give you, in place of a general address, as brief a resumé as possible of the history, technique and present status of enterorrhaphy.

### HISTORY AND TECHNIQUE.

The history of the intestinal suture is full of interest to the student of surgical literature. It is replete with stupendous ignorance, clever mechanical ingenuity, patient experimental research, and the careful application of pathological knowledge to the treatment of injuries and diseases of the intestinal canal. From an anatomico-practical standpoint the history of the intestinal suture can be divided into three epochs: 1, ancient; 2, modern; 3, recent. The ancient history extends back from Lembert (1826) to the time of Celsus. The modern history commenced with the researches of Lembert, which proved that healing of intestinal wounds takes place most constantly and speedily if the serous surfaces are brought and kept in contact by the sutures. The third period was initiated by the introduction of the aseptic suture by Lister, and will necessarily extend far into the future. We have reason to believe that the technique of intestinal suturing remains an unfinished chapter, and that the ideal method of uniting intestinal wounds has yet to be devised.

### I—ANCIENT METHODS.

Celsus mentions the intestinal suture, but speaks disparagingly of its use. It is probably on this account that the subject did not receive any attention until Abulkasem (II, 87) again revived it. This author recommended the jaws of large ants with which to unite the wound, and also refers to catgut made of the intestine of the sheep as a suturing material. The oldest suture, and the one to which nearly all of the old authors refer, is undoubtedly the glover's suture. This suture was intended to approximate the cut margins of the intestinal wound in the same manner as any ordinary wound, and was used for the double purpose of preventing the escape of intestinal contents, and of keeping the visceral in close contact with the external wound, consequently the two ends of the suture were brought out of the external wound and fastened in some way upon the surface of the abdomen until the time had expired when it was deemed safe to remove the thread.

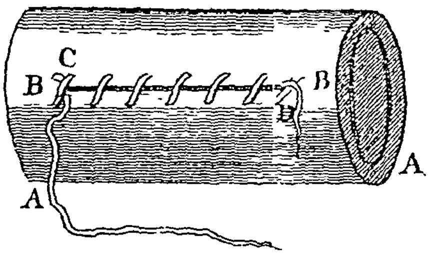


Fig. 1. Glover's suture used for uniting wounds of the intestines. *AA*, the *intestine*; *BB*, the wound; C, the beginning of the suture, with part of the thread hanging out; D, the *end* of the suture, where it is fastened in a knot.

Figure 1 is taken from Heister's Textbook of Surgery, translated by Hollingsworth, 1739, and represents the glover's suture as applied by the ancient surgeons. Roger, Jamerius, and Theodorich of Servia, inserted into the bowl a hollow cylinder of elder over which the wound was united by sutures. The cylinder was used for the purpose of keeping the lumen of the intestine patent. Wilhelmus v. Saliceto (Cerlata, Chir. Venet., 1520, page 107) used a segment of the dried intestine of an animal with the same object in view. Later, he agreed with his colleagues that the best material to assist the suturing would be the dried trachea of a goose or some larger animal, and thus originated the suture of the four masters. The foreign substance was not fastened in the bowel; after its insertion into the lumen the margins of the wound were united by ordinary interrupted sutures, which embraced the entire thickness of the intestinal wall and the ends of which were left long and were brought out of the external wound.

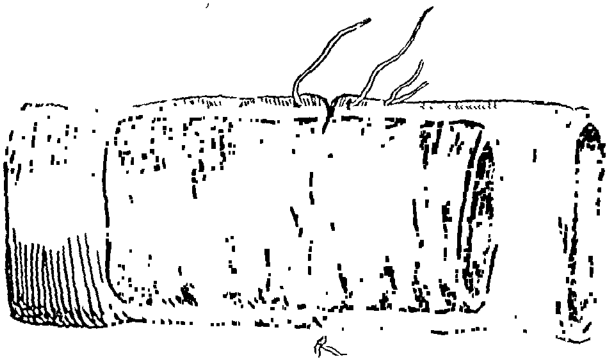


Fig. 2. Suture of the four masters.

The process of the ancients, however, had attracted so little attention that Du Verger, who revived it at the beginning of the last century, considered himself its author. It would not appear, moreover, that it had been frequently made trial of, or that it proved successful more than two or three times.

Du Verger modified the suture of the four masters by including the tracheal cylinder in the sutures as is shown in Fig. 3. Sabatier substituted for the trachea a cylinder of cardboard which he besmeared with sweet oil, essence of turpentine, or oil of St. Johnswort.

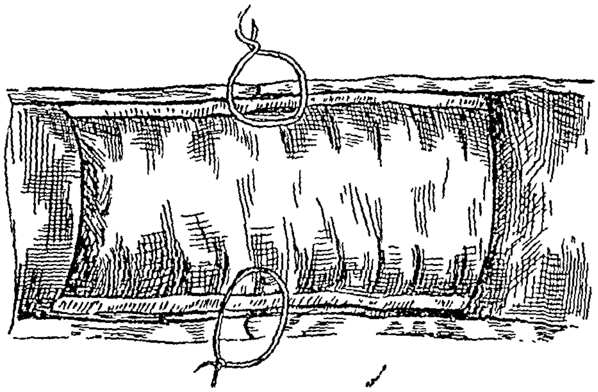


Fig. 3. Suture of Du Verger. Sutures including the tracheal cylinder.

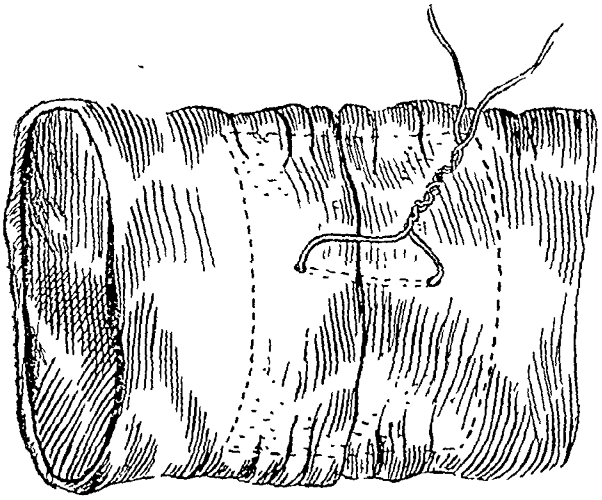


*Fig. 4. Suture of Sabatier.*

Sabatier used only one stitch in fastening together the two ends of the bowel and the cardboard cylinder, as will be seen by the accompanying illustration. The four masters used four stitches, Du Verger two, Sabatier one; when Ritsch ("Transactions of the Academy of Surgery," Paris, vol. i) modified the procedure still further by passing the thread from side to side through the center of the bowel and the cylinder, when the ends were twisted and brought out of the external wound.

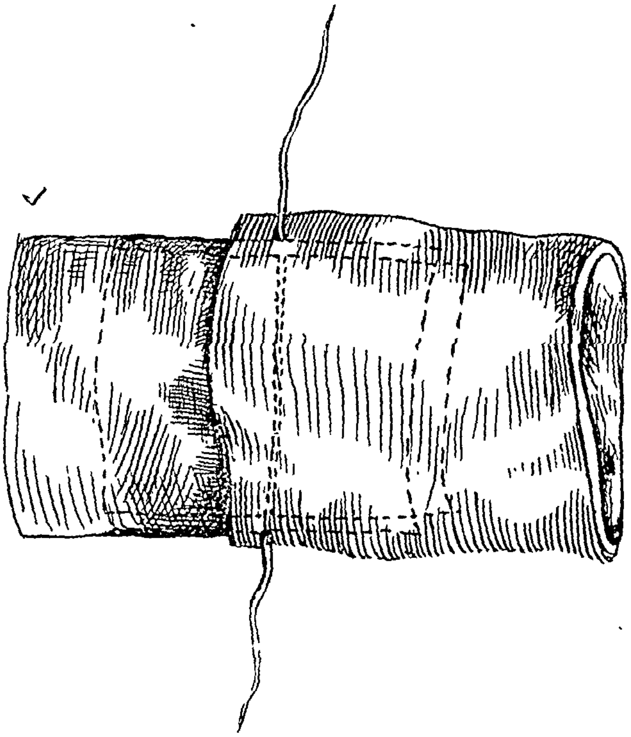


Fig. 5. Suture of Ritsch.

Watson ("Medical Communications," Vol. ii) recommended a cylinder of fish glue. His experiment on a dog proved successful. Ph. von Walther advised a tube of India rubber.

It is not surprising that the methods of suturing heretofore described did not add to the reputation of intestinal surgery, and that many of the most prominent surgeons of that time opposed closure of intestinal wounds by artificial means.

Guy de Chauliac approved of the suture only in the treatment of wounds of the large intestine, for which he recommended the glover's suture. Vigo, Fallopius and Fabricius ab Aquapendente regarded wounds of the small intestines as absolutely fatal.

Hyeronimus Braunschweig (Das Buch der Cirurgia, Strassburg, 1497) alludes to Galen and others as opposing the intestinal suture. He is in favor of the procedure and advises the glover's stitch in preference to the ordinary suture. After suturing the intestine he cleansed the part and applied a powder of equal parts of mastich, tragacanth, and gum arabic. He relates a remarkable case which occurred in the practice of Saliceto, one of the four masters. A cavalier of Papia (Pavia) stabbed himself in the abdomen with a knife in such a manner that the intestines prolapsed. A longitudinal wound of the intestine was found. Master Ottebanus of Papia was called, who pronounced the injury a fatal one. Owing to the swelling of the protruded intestines he failed in effecting reduction. Saliceto was called *in consultation who cleansed the intestines,* sutured the wound, enlarged the abdominal opening, reduced the mass and saved the would-be suicide.

In 1686 Richard Wiseman ("Chirurgical Treatises," second edition, London, 1686, p. 372), the great English surgeon, writes on this subject as follows:

> "If in such a penetrating Wound the small guts be wounded, the vehement Pain, continual vomiting of Choler, and dejection of Chyle by the Wound, will discover it; but in that case, the keeping of it open to seek the Intestine will be a hard task; and when you have found it, what will it signifie, to embrocate all the Region of the Belly with Ol. mastich lumbric, to dress the wound with Sarcoticks, and to keep it close and warm with Compress and Bandage. But if the great Intestines be wounded, and the Excrements discharge that way, it may be reasonable to lay open the Wound, and stitch the Gut with the Glover's stitch, sprinkling it with some of the aforesaid Agglutinatives; and reducing it back, stitch up the external Wound of the Belly, as hath been said."

It appears that more than fifty years later the consensus of opinion among surgeons in reference to the utility of the direct treatment of intestinal wounds had not undergone any material change if we rely on another eminent authority of that time. Heister in his classical work on Surgery (Hollingsworth's Translation, 1739) cautions not to suture intestinal wounds smaller in diameter than a goose-quill, after which he continues:

> "But large Wounds of the Intestines, though they seldom admit of Cure, are to be stitched up with the Glover's suture, before the Intestine is returned. To perform this, you should be provided with a fine Needle threaded with Silk, an Assistant should take hold of one part of the Gut, with a fine piece of Linen well aired before the Fire, whilst the Surgeon should hold the other part in his Left hand, and sew up the whole wound after the Glover's manner, leaving very small spaces between each Stitch, to-wit—a little more than a mathematical line. The last Stitch should hang out about a foot out of the Abdomen, by which the Silk may be drawn out when the Intestine is healed."

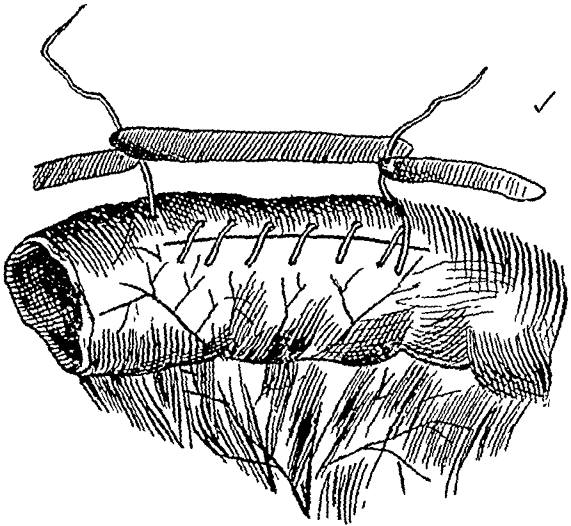


Fig. 6. Heister's method of applying the glover's suture.

After alluding to several other kinds of sutures, he gives his estimate of the value of suturing intestinal wounds: "But, to say the truth, Experience shows us that very few are saved, whatever Suture is made use of." In complete transverse wounds he advises the formation of an artificial anus.

Purmann (Feldscherer, etc., Frankfurth u. Leipzig, 1730) in his military surgery recommends suturing with silk or catgut, using the continued or glover's stitch. The catgut prepared from the intestines of sheep he immerses in wine over night before using it. He also refers to the shoemaker's stitch, but in his own practice always resorted to the glover's suture. In the after-treatment he advises mild cathartics and turpentine injections.

Mr. Samuel Sharp ("A Treatise on the Operations of Surgery," etc., London, 1769) gives the following directions in the use of the glover's suture:

> "Upon the Supposition of the Intestine being wounded in such a manner as to require the Operation, the Method of doing it may be this: taking a straight needle with a small Thread, you lay hold of the Bowel with your left hand, and sew up the wound by the Glover's stitch, that is, by passing the Needle thro' the lips of the Wound, from within outwards all the way, so as to leave a Length of Thread, at both Ends, which are to hang out of the incision of the Abdomen, then carefully making the interrupted Suture of the external wound, you pull the bowel by the small Threads into Contact with the Peritonæum, in order to procure an Adhesion, and tye them upon a small Bolster of Linen; tho' I think it would be more secure to pass the Threads with the straight Needle through the lower Edges of the Wound of the Abdomen, which would more certainly hold the Intestine in that Situation. In about six days, it is said the ligature of the intestine will be loose enough to be cut and drawn away, which must be done without great force; in the Interim, the wound is to be treated with superficial dressings, and the Patient to be kept very still and low."

During the close of the first decade of this century Zang (Darstellung blutiger heil künstlerischer Operationen, etc., Wien, 1818) entertained the most extreme pessimistic views in reference to the value of the intestinal suture as is evident from the following sentence: "Every intestinal suture is a mighty procedure in a highly vulnerable organ, and therefore a dangerous, yes, a very dangerous undertaking." As the most convincing proof of its harmful action, he claimed that the mortality following its use was much greater than when the process of repair is left to nature's resources.

The bad results which followed suturing of intestinal wounds in the hands of the ancient surgeons as well as the observation made that occasionally cases recovered without any aid on the part of the attending surgeon, led the way to the most conservative treatment. It was generally conceded that spontaneous recovery occurred when the visceral wound was in such a locality that no extravasation occurred into the peritoneal cavity, and the wound became adherent to a serous surface, notably the parietal peritoneum. Spontaneous recovery from complete transverse wounds of the intestine by adhesion of the margins of the proximal end to the external wound was observed by Hildanus, Blegny, Dionis, Palfyn, Joh. Maur, Hoffmann, Seebacher, Vater, Cheselden and others. This induced surgeons to imitate nature's processes by bringing the intestinal wound or the ends of the divided bowel into the external wound, in which position the wounded intestine was fastened by passing a thread through the mesentery, and fastening it upon the surface of the abdomen. This operation was first performed successfully on a dog by Blegny (Zodiac, Gall. Au. 2, p. 143). Schacher (Programmate Publico, Leipzig, 1720) reported the first successful operation of this kind on man. Verduc and von de Wyl were opposed to the intestinal suture and advised the formation of an artificial anus, especially in cases of transverse wounds.

It is probable that Paracelsus was the first to propose this method of treatment. Palfyn rejected all kinds of intestinal sutures and advised that in all wounds of the intestine easily accessible, the visceral wound should be brought in close contact with the external wound and the intestine held in this position by a thread passed through the mesentery until the intestine became firmly adherent to the abdominal wall.

Palfyn's method of fixation of the intestine against the abdominal wall is illustrated by Fig. 7.

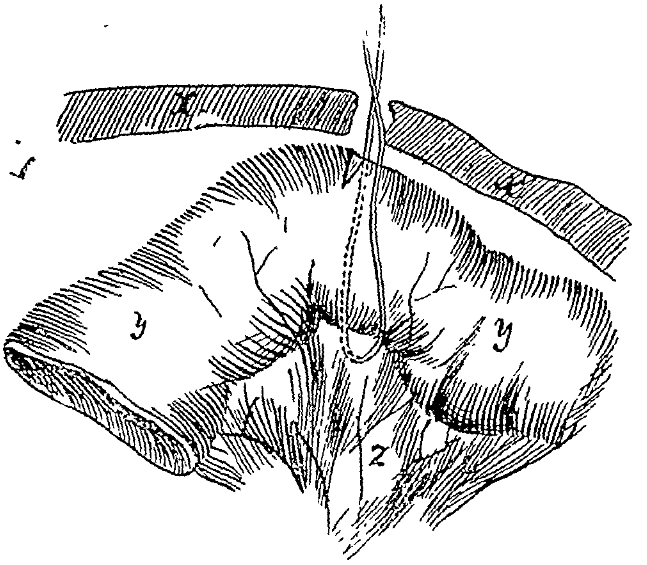


Fig. 7. Palfyn's method of treating intestinal wounds. a. Thread passed through mesentery and surrounding the bowel. y, Intestine. z, Mesentery. x, Abdominal wall.

As the traction by the mesenteric ligature must have caused narrowing of the bowel, Palfyn's method was modified so as to obviate this difficulty by passing the needle and thread twice through the mesentery and bringing both ends of the thread out through the external wound on each side of the bowel as is shown by Fig. 8.

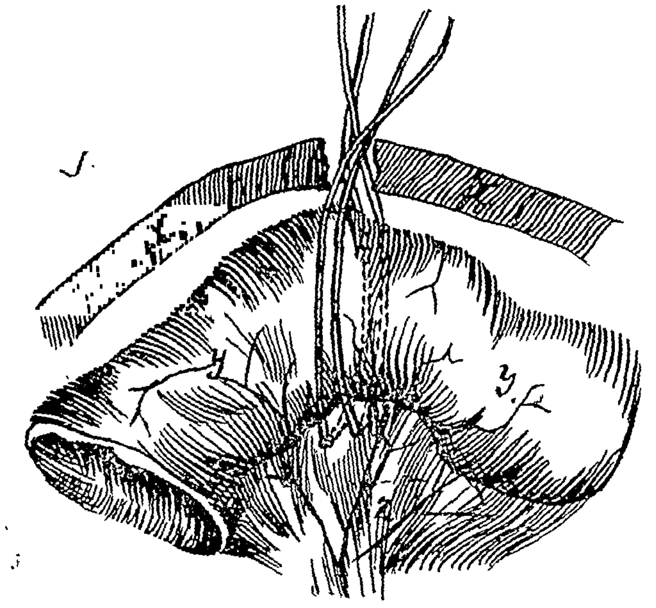


Fig. 8. Modification of Palfyn's mesenteric loop.

De la Peyronie's ("Mem. de l' Academ. de Chirurgie," T. III, 1733) method differed somewhat from Palfyn's, in that he stitched the bowel at the same time to the margin of the external wound. Other surgeons dispensed with the mesenteric loop entirely and fastened the injured part of the bowel to the inner surface of the abdominal wall by a suture which embraced both lips of the visceral and parietal wounds.

In complete transverse wounds of the intestine Benj. Bell recommended that each end of the bowel should be fastened to the corresponding margin of the external wound by an interrupted suture.

Reybard ("Mémoires sur le traitement des anus artificiels, des plaies des intestins et des plaies pénétrantes de poitrine," Paris, 1827) maintained that the principal object of the intestinal suture is to bring the visceral wound in contact with the inner surface of the abdominal wall and the external wound, thus securing healing of both wounds by adhesions, and acting on this supposition he devised an exceedingly ingenious plan in accomplishing this result without the use of sutures. In longitudinal and incomplete transverse wounds he resorted to the use of a thin oiled plate of light wood, twelve to fifteen lines in length, and four to six in breadth, to which two pieces of thread were attached.

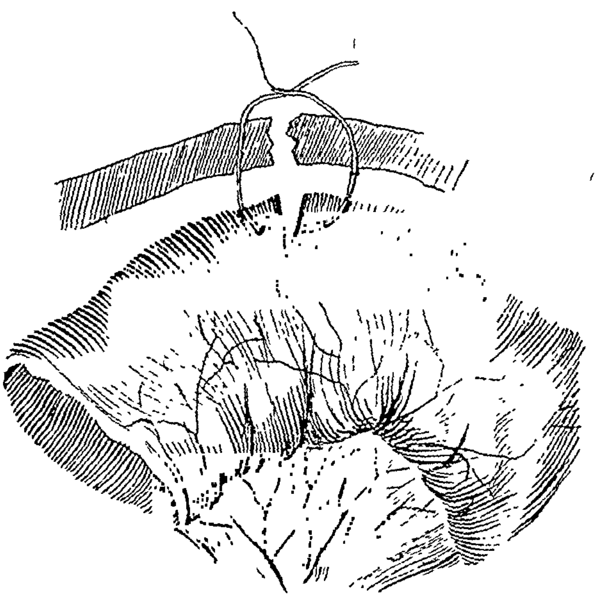


Fig. 9. Fixation of injured bowel to abdominal wall by a single suture.

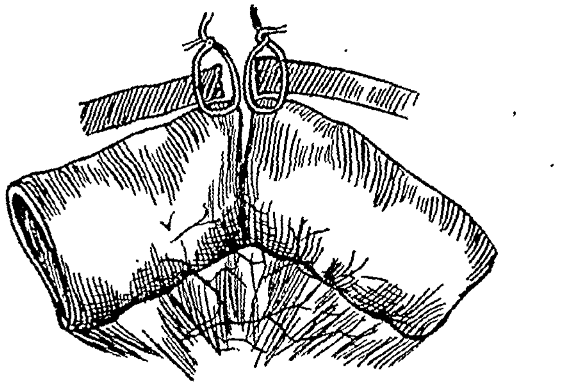


Fig. 10. B. Bell's method of attaching the visceral to the parietal wound.

Each thread is armed with a needle when the plate is inserted into the bowel through the wound, and the needle with the thread attached is passed through the entire thickness of the abdominal wall and brought out on the surface near the margin of the external wound. When both threads are in place they are tied together in such a manner that the small plate of wood presses at the same time the two lips of the intestinal wound against the sides of the abdominal wound, which latter it also at the same time keeps hermetically closed. When the adhesion of these different tissues appears to have become sufficiently firm (usually the third day), the threads are cut; the little plate of wood is released and passes away with the stools.

There can be no question that the intentional formation of an artificial anus in the treatment of intestinal wounds, so strongly advocated by Scarpa ("An. Chir. Abh. über die Brüche," Leipzig, 1892, p. 280; translated by Seiler from the Italian), and many of his contemporaries, yielded much better results as a life-saving measure than the old-fashioned suture. We have reason, however, to believe that in many instances in which life was saved the artificial anus remained permanently, constituting a great annoyance, and often an additional source of danger throughout the balance of the lifetime of the survivor. The great mortality attending this procedure and this remote sequence undoubtedly aroused surgeons to devise new methods of suturing. So firmly had the opinion gained ground that intestinal wounds could not heal by direct union that v. Walther (System der Chirurgie, Freiburg, 1851), as late as 1851, asserted that healing always takes place by parietal or omental adhesions. He insists that Larrey was wrong when he asserted the contrary and excuses his mistake by asserting that when he made his observations he did not have the necessary material to enable him to arrive at correct conclusions.

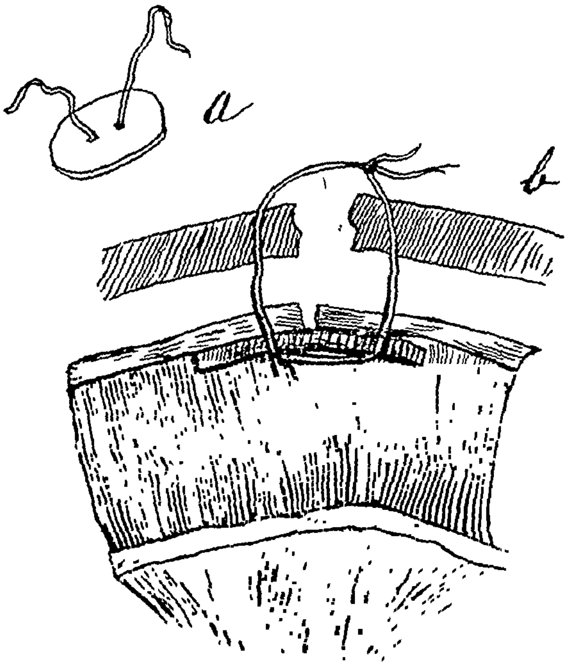


Fig. 11. Reybard's method *a*, Plate of wood with two threads; *b* plate *in situ* and fastened to abdominal wall by a suture including plate wall of bowel and abdominal wall.

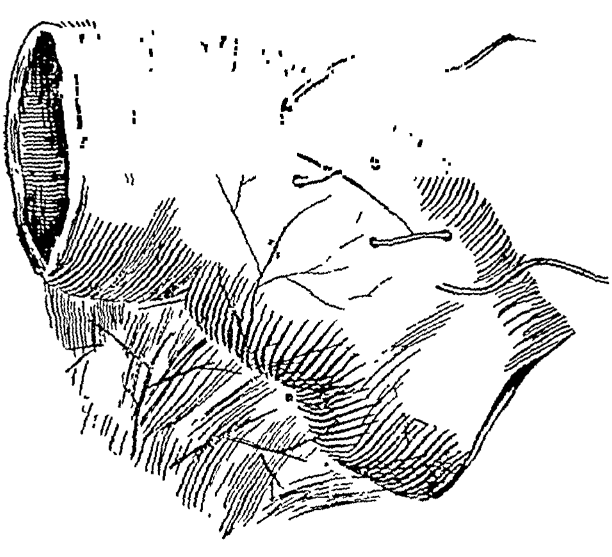


Fig. 11 *a*. Suture after Garengeot.

The next class of sutures to be described resembles the old-fashioned glover's suture in so far that the different sutures were intended to prevent the escape of intestinal contents, and at the same time by leaving the threads long they could be utilized in anchoring the visceral against the ventral wound.

Garengeot modified the ordinary glover's suture only in so far that he placed the stitches farther apart.

Larrey ("Revue Médicale, 1820, iv, p. 77) regarded a single row of the continued suture as unsafe and advised in its place two rows, using for each row threads of a different color, and making the stitches in opposite directions. He recommended removal of the two threads at the end of seven or nine days

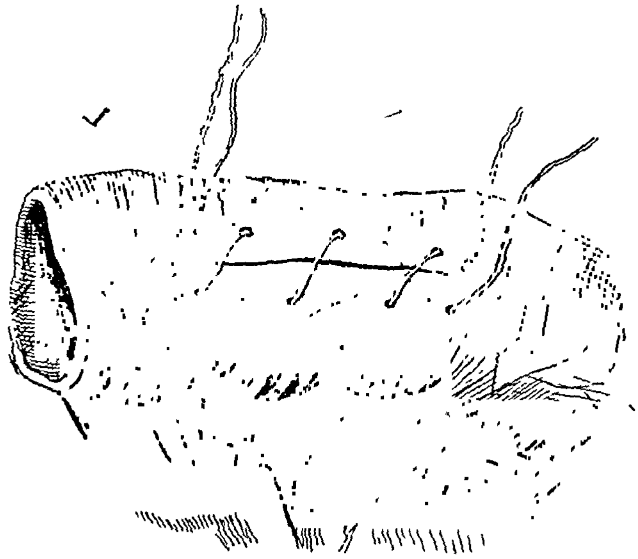


Fig. 12. Larrey's double the glover's suture.

Benj. Bell feared the removal of the suture and objected to the ordinary glover's suture because he believed it produced dangerous narrowing of the lumen of the bowel. He modified the glover's suture in such a manner that he passed the needle from within outward terminating the thread at each end with a knot and cutting the thread short to the knots. He relied on the suture cutting its way into the lumen of the bowel to be discharged with the feces.

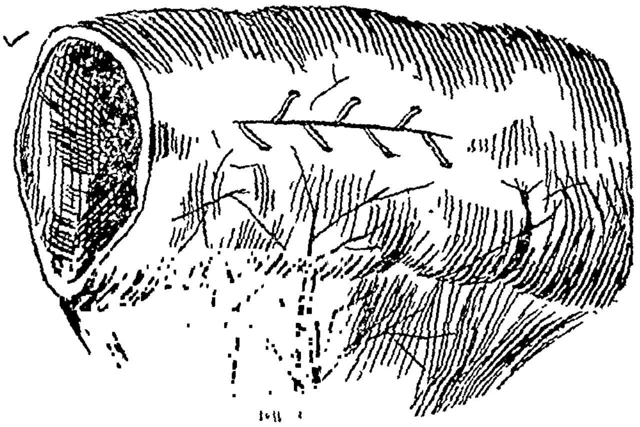


Fig. 13. B. Bell's suture.

Bertrandi and Petit devised the *sutura transgressiva*. It is made by bringing the margins of the wound in contact, passing the needle from right to left, then from left to right alternately and bringing both ends of the thread out of the external wound in order to bring both wounds in contact.

Le Dran ("Traité des Opérat.," Paris, 1743) takes as many threaded needles as stitches are required, and passes them three lines apart through both margins of the wound. Ties together the ends of the threads of each side and twists the two bundles of threads. The intestine is thereby puckered up and sutures approximated.

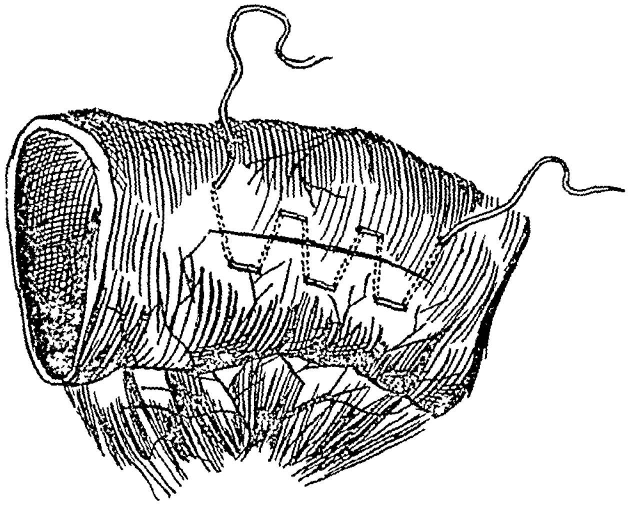


Fig. 14. Petit's sutura transgressiva.

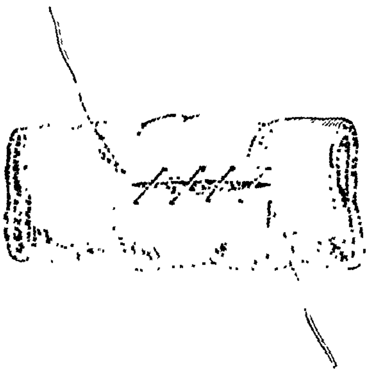


Figure 14 a.

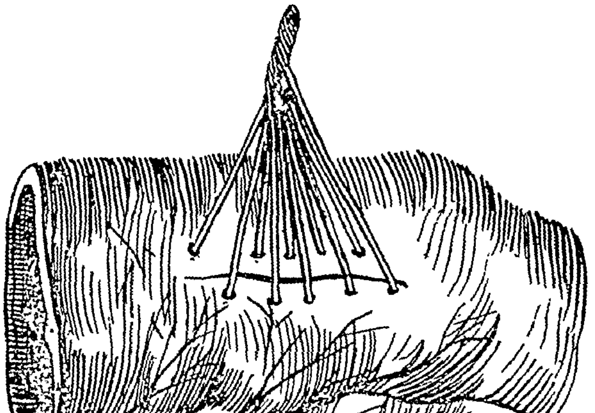


Fig. 15. La Dran's method.

He claims that by this procedure the intestinal wound is greatly diminished in size, and often heals without leaving a fistula; at the end of four to six days the threads are untwisted and removed. Richter twisted each suture separately without tying it and brought them out of the external wound with which to fasten the bowel against the abdominal wall.

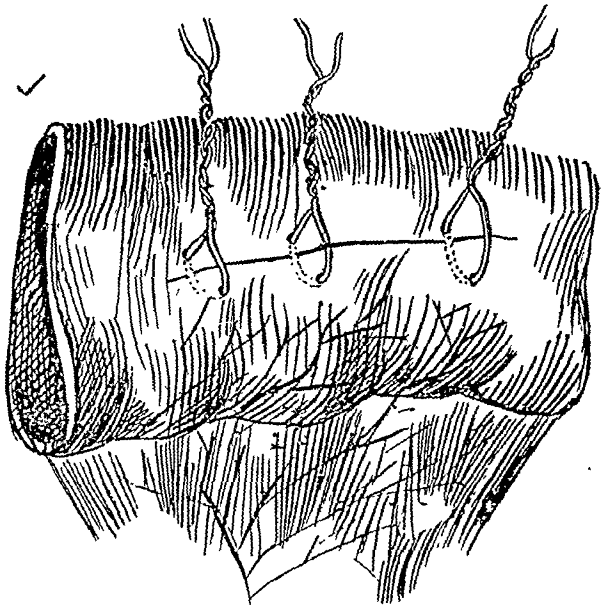


Fig. 16. Richter's method.

Löffler crossed the threads of each suture only once and fastened the ends upon the surface of the abdomen.

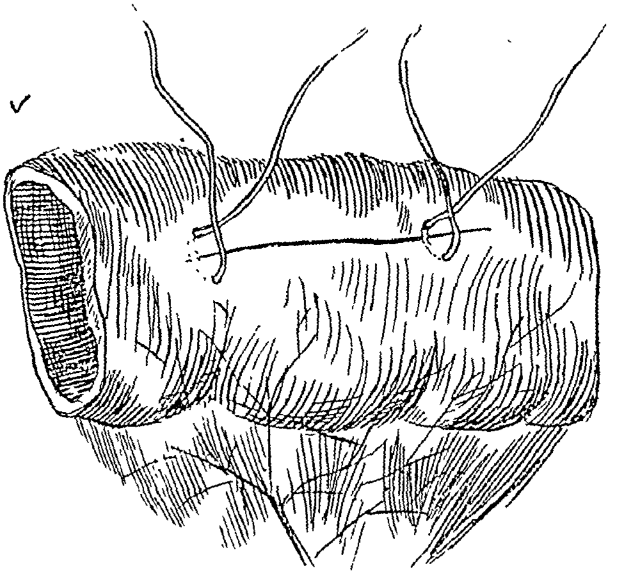


Fig. 17. Löffler's method.

With the exception of the suture devised by B. Bell, all of the modifications of the glover's suture were intended to anchor the visceral wound opposite or in the external wound and were removed as soon as the intestine had become firmly adherent, that is, in the course of four to seven days. In many of the cases in which life was saved by this kind of surgery a fistulous opening remained, which in those days it was found difficult to remedy. With a view of preventing this unpleasant remote complication surgeons commenced to unite the ends of the bowel in complete transverse wounds by invagination. The first trials were extremely crude, and the results correspondingly disastrous. Ramdohr recommended invagination as a means of uniting the ends of the intestine in complete transverse wounds as early as 1730. Having under treatment a soldier in whom the continuity of the intestinal tube had been destroyed, he proposed to insert the upper into the lower end, to fasten them together in this position by means of one point of suture, then to reduce them and leave them in the abdomen, fastening the bowel to the abdominal wall by the suture. His patient recovered. As he died some years after of some other affection, Ramdohr being thus enabled to examine the condition of the parts, removed the portion which had been formerly divided, and sent it to Mœbius, who took occasion to show it to Heister, which latter upon the strength of this, made experiments of the same operation on dogs, but without success.

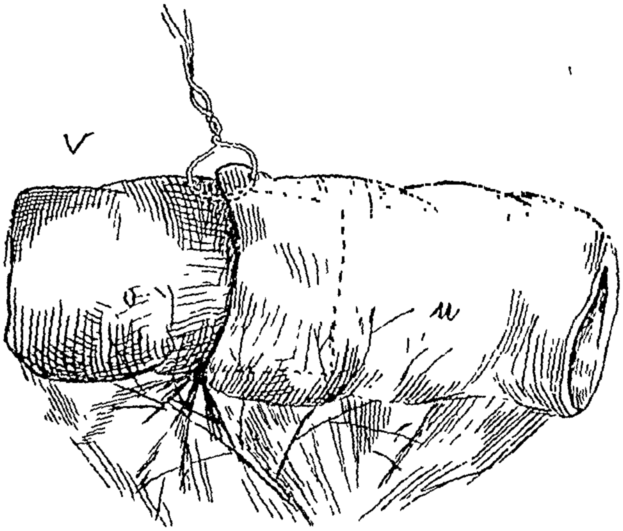


Fig. 18 Ramdohr's method of invagination. O, upper end; U, lower end.

The method of Ramdohr, which has been eulogized by some, rejected as impossible or dangerous by others, admitted as very ingenious by Louis, and made trial of in a great number of instances since it has been known, does not appear to have succeeded but in a very small number of cases. Louis aimed to improve Ramdohr's method by detaching the mesentery from the upper end to the extent of the intended invagination for the purpose of guarding more effectually against disinvagination.

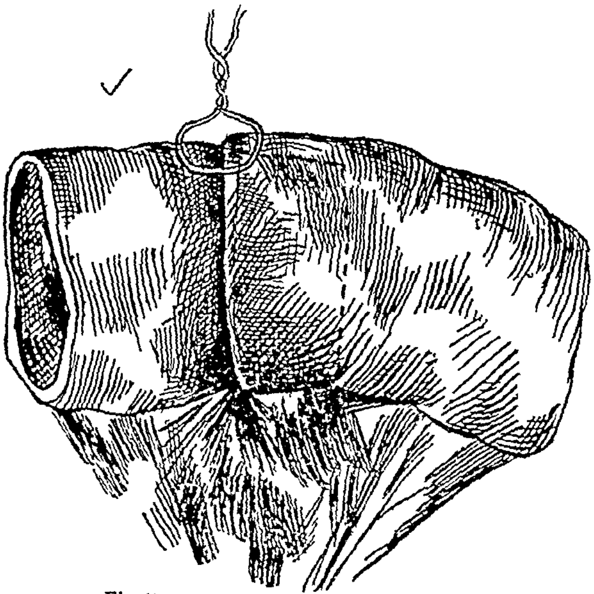


Fig. 19. Method of invagination of Louis.

Benj. Bell inserted a solid cylinder of tallow into the upper end of the bowel before making the invagination, and fastened the bowel with two rows of interrupted sutures which included the entire thickness of both intestinal walls at each cut end of the bowel.

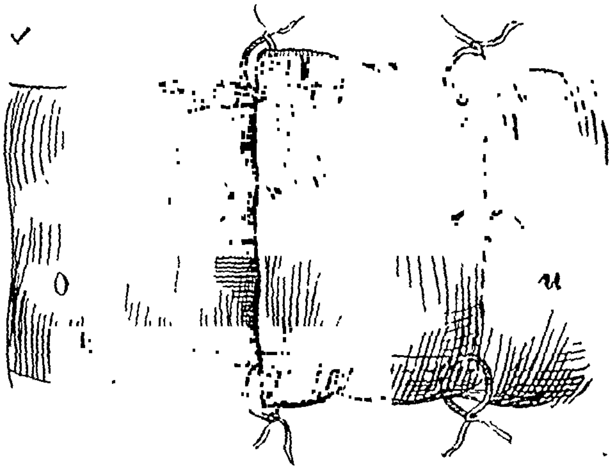


Fig. 20. Benj. Bell's method of invagination.

Chopart and Desault, recognizing the difficulties encountered in making the invagination, lined the upper end of the bowel with a cylinder of cardboard which was included in a single ligature passed through the bowel from side to side, when both ends of the thread were passed with a needle in the lower end from within outward, when the invagination was effected by making traction upon the threads and the invagination maintained by fastening the threads upon the surface of the abdomen.

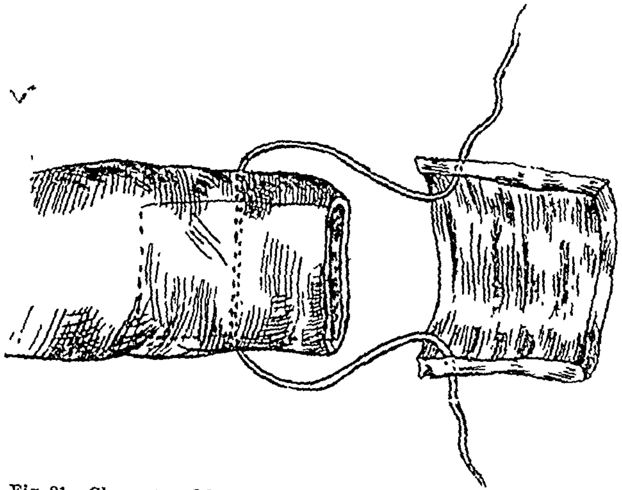


Fig. 21. Chopart and Desault's method of invagination in complete transverse wounds.

These authors applied the same principle of treatment to incomplete transverse wounds of the intestine. The upper margin of the wound was transfixed by a single suture transversely from within outward, when the ends were passed with a needle through the lower margin from within outward and tied, making thus the lower margin overlap the upper, bringing in contact its mucous surface with the peritoneal surface of the upper.

As all these methods had the common fault of approximating mucous membrane with peritoneum, it is not difficult to understand that none of them survived the practical test for any length of time. The seriousness of this technical mistake was first pointed out by Richerand. The researches of Bichât have shown that mucous membranes do not contract adhesions with each other; and that adhesive inflammation takes place most surely and speedily between serous surfaces.

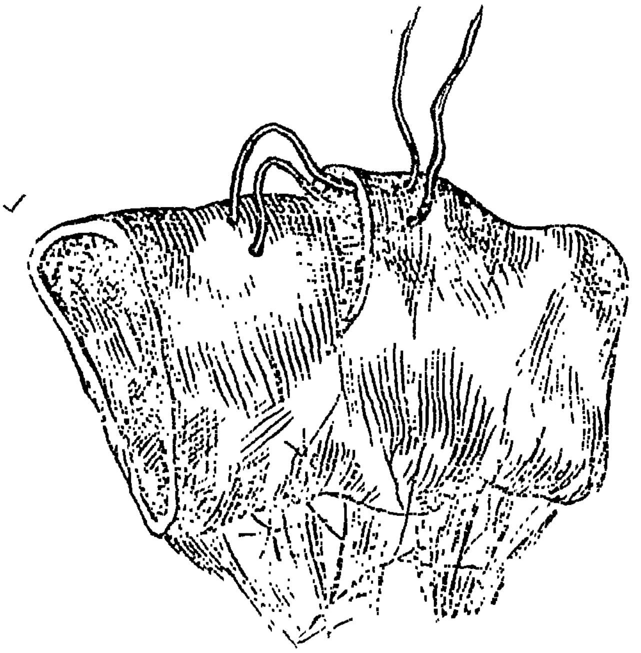


Fig. 22. Chopart and Desault's method of uniting transverse wounds of the intestine. *a*, Suture in place; *b*, suture tied.

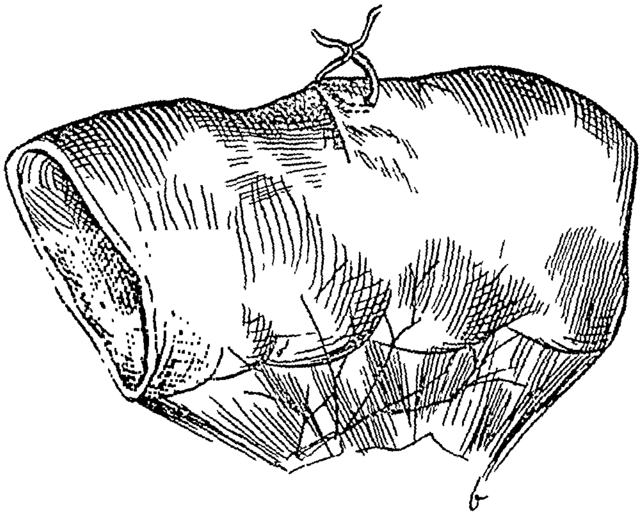


Fig. 22 *b*.

Travers ("An Inquiry into the Process of Nature in Repairing Injuries of the Intestines," London, 1812) experimented with the old suture including all of the tunics of the bowel, but cut the threads short to the knot and did not fasten the intestine against the abdominal wall as had been the general custom up to that time. He found that the intestinal wounds in animals thus treated usually healed. The sutures cut their way through the tissues in the direction of the lumen of the bowel and passed away with the feces. He placed the sutures very closely so as to secure ample mechanical protection against the escape of fluids, while Astley Cooper placed them much farther apart, using only a sufficient number to prevent fecal extravasation. In small wounds and limited gangrene Astley Cooper made a small cone on the affected side of the bowel by seizing the wound or gangrenous patch and applied a ligature of fine silk around the base. The ligature cut its way into the bowel during the time the defect became sealed by plastic lymph. The necrosed mass and ligature escaped into the bowel through the defect made by the ligature.

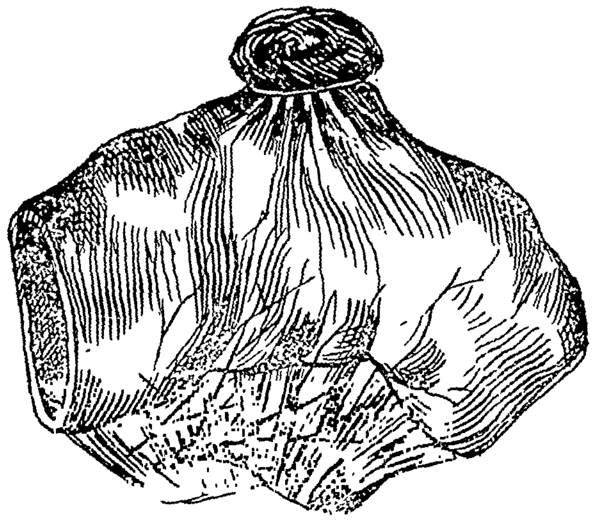


Fig. 23. Astley Cooper's method of dealing with small wounds and circumscribed gangrenous patches.

### II—MODERN METHODS.

The researches of Richerand, Bichât and Travers prepared the way for Lembert to institute a complete revolution in the application of the intestinal suture. Until his time the discovery that adhesions take place most rapidly between serous surfaces was ignored in the use of the intestinal suture, and if success followed the surgeon's efforts the result was attributable less to the suture than the circumscribed plastic peritonitis, the product of which buried the sutures and sealed the wound by a mass of plastic lymph. To Lembert is conceded almost by universal consent the credit of having established the modern doctrine concerning the healing of intestinal wounds. As is the case in all great discoveries, claimants for priority were not wanting. Jobert ("Arch. Gén. de Méd.," T. iv. p. 73) has claimed this honor; Faure ("Arch· Gén. de Méd.," T. x, p. 474) alleges that when he was a pupil of the Hospital of St. Louis, he had proposed before the year 1820, the approximation of serous surfaces in intestinal wounds. Denans ("Soc. Méd., de Marseilles," 1826) also mentions that [illegible] of his process were made without [illegible] work done by Lembert and Jobert. Lembert claims that he published his first paper on this subject in 1825. ("Bull. de Ther.," T. ix, p. 325). Denans began his experiments in 1823, but they were not published until March, 1824, and the Archives for January of the same year, contain a description of the process of Jobert. There can be no question that through the labors of Lembert the new doctrine gained a firm foothold and was promptly adopted, not only by his countrymen, but by the surgeons in England and Germany. Lembert's technique and practice brought about a sudden transition from the ancient to the modern methods. Since his time a great variety of methods have been proposed with a common object in view; to bring into apposition the serous surfaces of the margins of the wound.

Lembert's work initiated the most important era in the history of the intestinal suture. He must always be regarded as the founder of modern successful intestinal surgery. The technique of intestinal work is still open to improvements, but the great principle inculcated by Lembert to rely on the serous coat in procuring early and permanent adhesions will never be rejected.

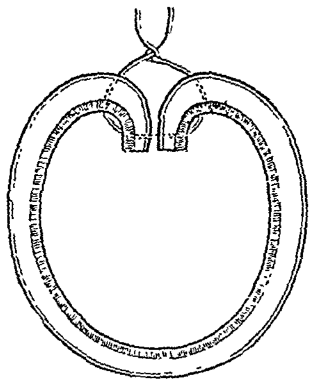


Fig. 24. Lembert's suture.

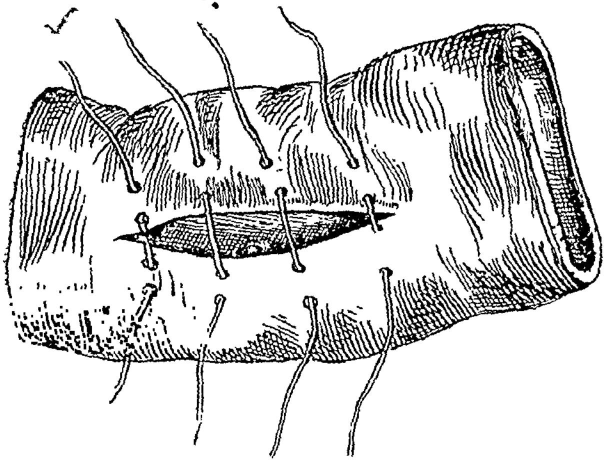


Fig. 25. Lembert's sutures in place.

His first paper on this subject was published in 1826. (Répertoire Général d' Anatomie et de Physiologie pathologique," T. ii, 3, 1826). He used interrupted sutures of fine silk, and cut the threads short to the knot, making no provision for fastening the bowel against the abdominal wound. The point of the needle is introduced upon the external surface of the intestine at the distance of two or three lines from the margin of the wound; he penetrates through the tissues as far down as the mucous membrane, brings it out at one or two lines distance from its place of entrance; applies the needle with the same precautions upon the external surface and into the tissues of the opposite side. He places the sutures about three to four lines apart, and when they are all in place commences to tie from one end, turning the margins of the wound carefully toward the lumen of the bowel with a probe.

After completion of the suturing the part presents externally a linear depression with a corresponding ridge on the inner side. This method secures serous approximation to the extent of space included by the sutures. The sutures become encysted and do not cut their way into the lumen of the bowel. Lembert's suture has been variously modified at different times. Jobert included in the suture the entire thickness of the wall of the bowel.

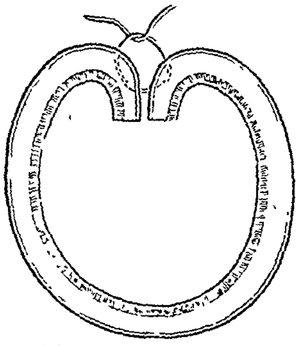


Fig. 26. Jobert's suture.

Breidenbach tied the knot on the inside of the lumen of the bowel.

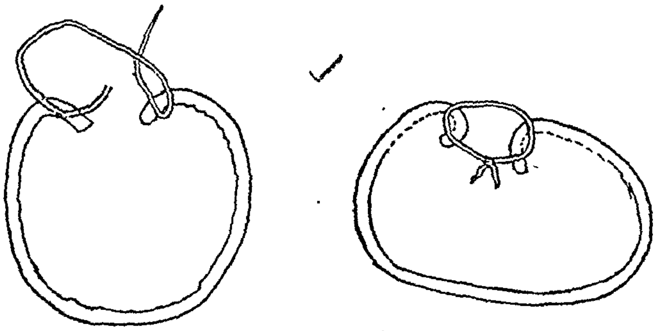


Fig. 27. Breidenbach's suture.

Dupuytren made the Lembert stitch in the form of the continued suture.

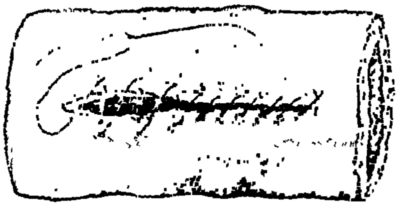


Fig. 28. Dupuytren's suture.

Dieffenbach included in the suture only the peritoneal coat.

Gély ("Recherches sur l' emploi d' un nouveau procédé de suture contre les divisions de l' intestin," Paris, 1844) armed each end of the thread with a needle. A loop is formed by transfixing the serous and muscular coats at one end on each side of the wound about 4 mm. from the margins of the wound, grasping about 5 mm. of surface. The needles and threads are then crossed and similar stitches taken and the process repeated until the opposite angle of the wound is reached, starting with the stitch at the subsequent point of exit of the needles. By making traction on the threads the margins of the wound are neatly inverted and only one terminal knot is required.

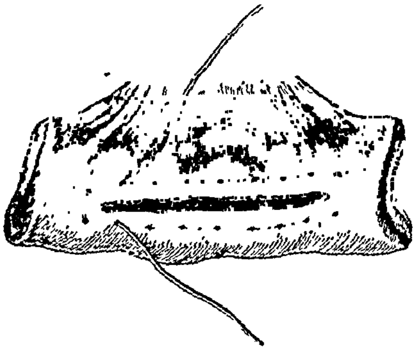


Fig. 29. Gély's suture.

According to Nélaton the advantages of this method are: that the sutures close the wound hermetically and that the thread can escape into the lumen of the bowel.

Blatin's modification of Gély's method consists in using only one needle and two threads of different color, first sewing with one and returning with the other, avoiding the punctures made by the first needle.

Emmert's ("Lehrbuch der Chirurgie," Stuttgart, 1862, p. 232) method of suturing intestinal wounds consists of a series of double Lembert sutures as is well illustrated by Fig. 30.

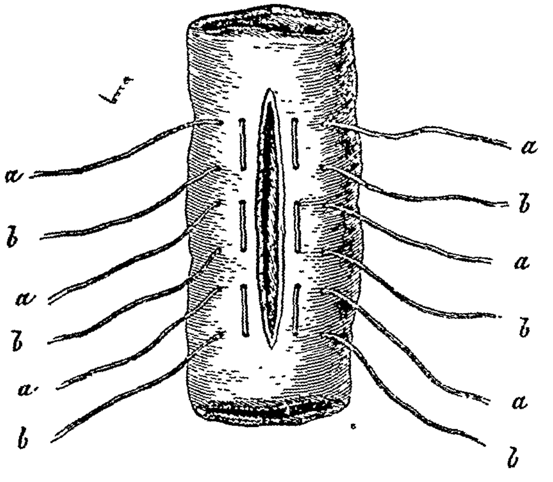


Fig. 30. Emmert's method.

When the sutures are all in place the corresponding threads on each side are tied and the margins of the wound are carefully inverted.

A very strange method of closing intestinal wounds was devised by Bouisson. Two insect pins of the length of the wound are pushed through the tissues parallel to and about 2 mm. from the margins of the wound. The pins are pushed in and out from the surface of the intestine in the same way as in making a continued suture. A ligature is passed under the free parts of the pins on each side at different points, and as they are tied the margins of the wound are inverted and approximated. All the threads are brought out of the external wound. On the third or fourth day the pins are withdrawn, thus releasing the ligatures which are also removed. Lembert's principle of uniting serosa to serosa was first applied in making the invagination suture by Jobert. ("Mémoires sur les plaies du canal intestinal," Paris, 1827). He modified Ramdohr's method by turning in the edge of the lower end before making the invagination, thus bringing serous surfaces in contact for adhesion. The invagination is made by inserting two sutures at opposite points in the upper end and passing the ends with a needle through the inverted margin of the lower end a few lines apart. By making traction upon the sutures invagination is effected and maintained by tying the sutures.

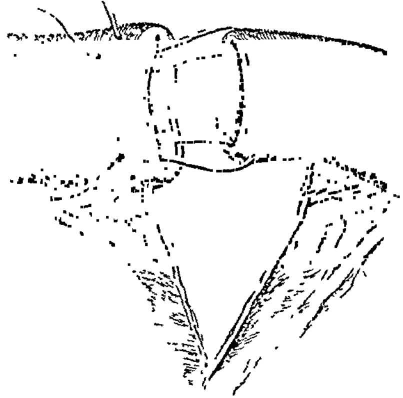


Fig. 31. Jobert's invagination suture.

Jobert's suture has had an extended trial in restoring the continuity of the bowel in the treatment of complete transverse wounds, and has yielded fair results. The most objectionable feature to it is the fixation suture, which being composed of unabsorbable material must finally cut through the tissues which it includes before it can escape into the bowel, a process which is necessarily attended by no inconsiderable risk of extravasation and its consequences —septic peritonitis and death.

Schmidt, Thompson and Travers had observed the singular phenomenon, viz., that if a thread is applied around a small perforation of the intestine, it soon sinks into it as into a depression, in such a manner as to reach gradually the interior of the canal and to become entirely free there, at the same time that the serous coat or surface of the bowel is united behind it, and blended with a layer of plastic lymph as if intended to fill up the opening which, but for that, would have been left. Still more, Travers has found that if the entire caliber of the intestine is strangulated, the peritoneum of the upper portion adheres so rapidly to that of the deeper tissues, that the septum formed by the strangulation soon becomes gangrenous, and is detached and drawn in the direction of the lower part of the bowel in such a manner that the tube ultimately becomes perfectly re-established. Utilizing these facts as a basis, Amussat ("Casper's Wochenschrift f. d. Medicin," 1834, No. 44), made use of invagination and circular constriction in re-establishing the continuity of the intestinal canal.

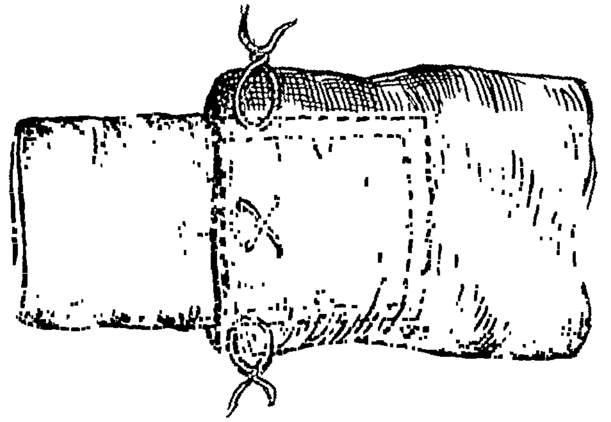


Fig. 32. Amussat's method of invagination and circular constriction. *a*, Invagination; *b*, circular constriction.

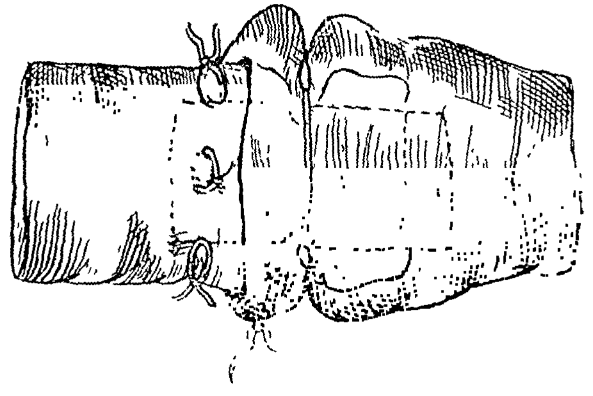


Fig. 32 *a*.

In order to maintain the patency of the bowel he inserted a hollow cylinder of elder into the upper end before making the invagination. This cylinder had a circular groove in the center. The invagination was maintained by a few sutures. A thread was then tied firmly around the bowel at a point corresponding with the circular groove. As soon as the string had cut its way into the bowel the cylinder was released and passed away with the feces, while the serous surfaces on each side of the groove made by the string became *adherent*.

Choise ("Thése de Paris," 1837, No. 322), experimented on animals by inserting into the upper end a piece of the trachea of an animal, and after invaginating this into the lower end tied a ligature firmly around the invaginated portion. The ligature soon ulcerated through into the bowel, adhesions between the approximated serous surfaces formed in the meantime, and the ligature and tracheal ring escaped with the feces. The experiments on lower animals were successful. He later substituted a piece of cork for the trachea and obtained similar good results.

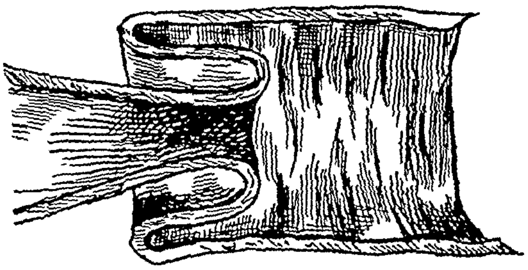


Fig. 33 Béclard's procedure. *a*, Invagination; *b*, circular constriction.

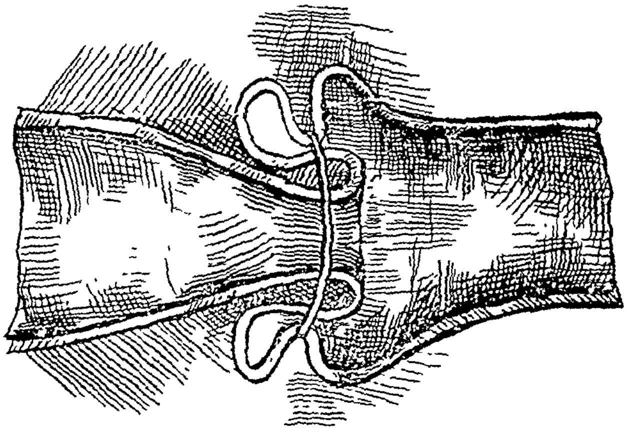


Fig. 33 *a*.

Béclard obtained the same results in his experiments on animals without the use of a cylinder.

After making the invagination he constricted the bowel by tying a thread firmly just below the margin of the ensheathing tube. Zang (op. cit.), detached the mesentery from the upper end to the distance of an inch, and invaginated this part into the lower end after turning in its margins. The invagination was maintained by a mesenteric suture which grasped both sides, the threads of which were brought out of the external wound and fastened so as to hold the invaginated part in the ventral wound. Various efforts have been made at different times to dispense with intestinal sutures by substituting for them some other kind of mechanical support. One of the earliest attempts in this direction was made by Denans ("Recueil de la Societé roy. de Méd. de Marseille," l'Année. 1, 1826), a surgeon of Marseilles. The procedure is an exceedingly ingenious one. In effecting an end-to-end union in the treatment of complete transverse wounds or after resection, he introduces into each end of the bowel a ring of silver or zinc, over which he inverts the margins of the ends of the bowel and connects them by a slightly smaller but wider ring of steel which is cut longitudinally, the margins overlapping so that it can be made smaller by pressure, and exert the necessary peripheral *pressure to hold the other two rings firmly together.* The central ring is compressed with a pair of strong forceps when it is first inserted into the upper end of the bowel, then into the lower, when the two rings are approximated over it, thus grasping firmly the inverted margins all around. The serous surfaces outside of the grasp of the rings become adherent, the inverted margins subjected to pressure between the rings slough, the rings are released and pass away with the stools.

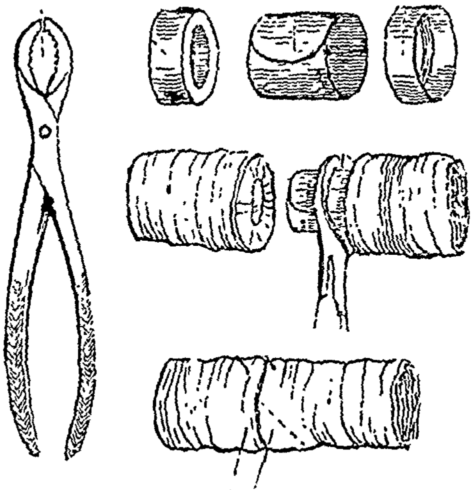
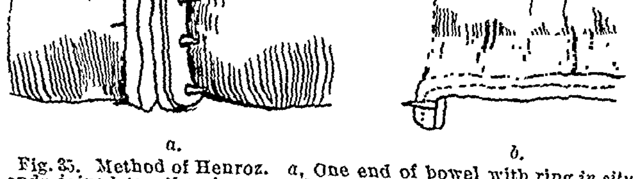


Fig. 34. Method of Denans. *aa*, Rings for bowel ends; *b*, connecting steel spring ring; *c*, upper end of bowel containing ring and proximal end of connecting ring; *d*, lower end of bowel containing ring, *margin* of bowel turned inward; *e*, two ends joined together; *f*, forceps to aid in the insertion of middle ring.

In his first experiments the connecting piece was a perfect ring, and in order to prevent separation of *the ends of the* bowel he used two points of suture, as will be seen in the illustration (e). Later ("Noté à l'Acad. de Méd.," 1838), he used the steel spring ring for the connecting part and dispensed with the sutures. His experiments on animals proved very successful. Guersant reported a successful case. Nélaton admires the perfection of the mechanism of this method, but makes the serious objection to it that the rings are not always at hand when needed, and that the passage of such a large foreign body is a matter of difficulty and might lead to fatal complications.

Baudens modified Denans' method by using a single cylinder with a deep transverse groove in the center and two rubber rings. The inverted margins of the bowel ends were fastened upon the cylinder by the rubber rings pressing in opposite directions towards the center of the groove on the outer surface of the cylinder. The inverted margins subjected to



*a*. *b*.

Fig. 35. Method of Henroz. *a*, One end of bowel with ring *in situ*; *b*, ends joined together between the two spiked rings; *c*, ring showing spikes and perforations for spikes of opposite ring.

the elastic pressure sloughed and came away with the cylinder and rubber rings.

Henroz clamped the two ends of the bowel together between two rings, each supplied with a number of sharp metallic points which transfixed the mucous membrane, and by taking hold in perforations in the ring on the opposite side held the rings together and fixed the bowel ends.

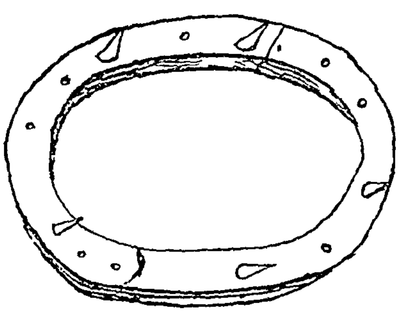


Fig. 35 *c*.

The great objection to this method is that the margins of the ends of the bowel were not inverted; union was effected with the mucous membrane turned outward, consequently it must have proved a failure even in experiments on the lower animals.

Somewhat similar mechanical contrivances that I have described above in the end-to-end approximation of the intestine have been devised in the treatment of longitudinal and incomplete transverse wounds.

Beranger-Feraud ("Des diverses méthodes de reunion des plaies intestinales," Paris, 1870), invented a clamp which he regarded as being especially applicable in the treatment of longitudinal wounds.

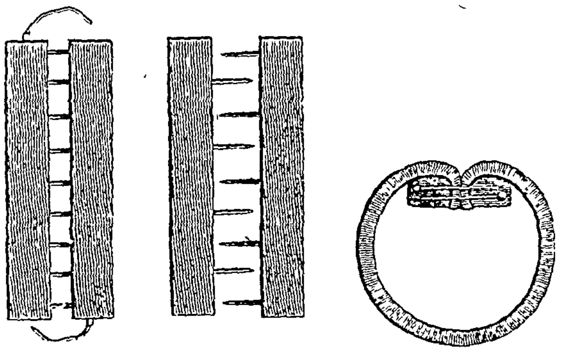


Fig. 36. Beranger-Feraud's cork clamp suture. *a*, clamp ready for use; *b*, clamp closed; *c*, clamp in place holding the serous surfaces of the inverted margins of wound in contact.

Two quadrangular prisms of cork 6 mm. in thickness and as long as the wound are prepared. Fine insect needles are pushed through these pieces of cork about 6 mm. apart, in such a manner that the heads well pushed into the cork are covered with sealing wax. One of the prisms is inserted into the wound, and the points of the pins are made to penetrate the entire thickness of the intestinal wall near the margin of the wound from within outward. After the other prism is in place, the serous surfaces are brought in contact by pressure from without against the prisms, so as to bury the points of the pins in the opposite piece of cork sufficiently deep to insure adequate pressure. The included parts slough away with the clamp; meanwhile adhesions form between the approximated serous surfaces outside of the clamp. For the purpose of giving greater security the two pieces of cork can be fastened together in addition by a curved pin as is shown in Fig. 36, b.

Bobrick ("Med. Vereinszeitung," 1850), described another kind of clamp suture. The clamp is made either of sheet lead or a thin strip of silver the length of the wound. The metal strip is folded in the center in its long axis like the cover of a book, before it is inserted into the bowel through the wound. The margins of the wound are then inverted and engaged between the two leaves of the clamp, when by pressure from without the clamp is closed sufficiently firm to fix the parts included securely. Adhesions form in a short time on the surface outside of the grasp of the clamp, the included parts slough and escape with the clamp. The greatest objection against all the substitutes for the intestinal sutures that have been mentioned, is that a foreign body is left in the intestinal canal which necessarily constitutes an additional source of danger, because spontaneous elimination is attended by many difficulties and risks. In this regard the experimental results are not directly applicable to man. The intestinal canal of dogs is much shorter in proportion to the size of the body than that of man, and the muscular coat is much more developed. Dogs are reckless eaters, and for this reason they have been supplied with an intestinal canal that can dispose of foreign bodies of large size and most dangerous forms. This is not the case in man, hence leaving a foreign substance of any considerable size in the intestinal canal of man is fraught with danger.

That Lembert's method of treating intestinal wounds and its many modifications did not give universal satisfaction, becomes evident from a paper published by Privat in 1846. ("Bull. de Thérapie," Sept., 1846) Under the title of *Autoplastic* he described in this paper a new method of dealing with intestinal wounds which he successfully applied in a case of penetrating wound of the abdomen complicated by four intestinal wounds. The wounds were first sutured and fastened in the abdominal wound by mesenteric loops. The sutures tore through on the second day, when he fastened over each wound an adjacent intestinal loop. On the seventh day three of the wounds were closed and the intestine was returned into the abdominal cavity. The fourth wound was not quite closed and was retained in the external wound. It closed later and the patient made a perfect recovery. He is of the opinion that intestinal wounds can be healed more readily by covering them with an adjacent healthy loop than by suturing. It will thus be seen that in spite of great improvements over the ancient methods, the progress made did not answer the practical demands.

### III—RECENT METHODS.

The second great improvement in intestinal suturing was the introduction of the aseptic suture by Sir Joseph Lister, nearly a quarter of a century ago. We can readily understand that the old septic suture was the direct cause of death in many cases in which the operation was faultlessly performed. Lister taught us to use aseptic material for the sutures and to apply the other principles of antiseptic surgery in the management of intestinal as well as other wounds. The adoption of this method of wound treatment removed a frequent source of septic peritonitis and added much to the success and rapid development of intestinal surgery. The aseptic suture in aseptic tissues no longer constituted a source of danger. Under this plan of treatment absorbable sutures were removed by absorption, unabsorbable material became encysted without causing harmful irritation. The catgut suture that met at first with such a warm reception by surgeons in the treatment of intestinal wounds has been gradually displaced almost completely by the aseptic silk suture, so that at present but few surgeons rely upon it in the treatment of an intestinal wound. Czerny (Sammlung Klinischer Vorträge, 1881, No. 201) added another row of stitches to Lembert's sutures. He wished to approximate not only the peritoneal surfaces, but also the margins of the mucous membrane in order to prevent escape of intestinal contents between the parts brought in apposition by Lembert's stitches and to place the parts in an ideal condition for repair.

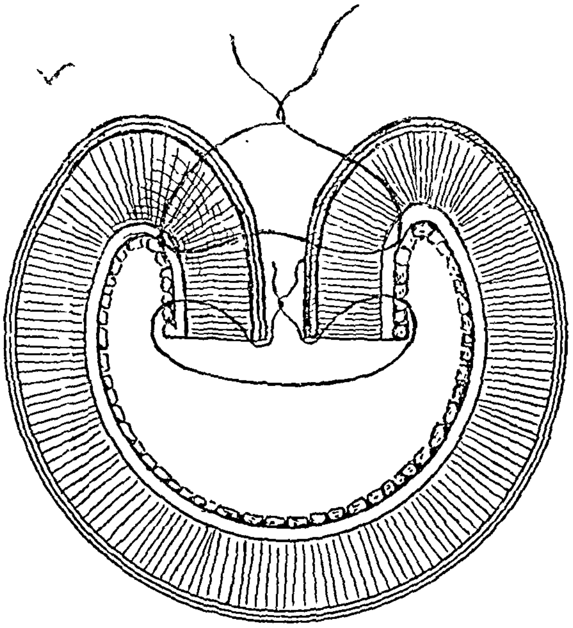


Fig. 37. Czerny-Lembert suture.

Czerny's modification of Lembert's method consists in uniting first the mucous membrane by a row of stitches, which, with the exception of the last one or two, are tied on the mucous surface. These stitches ulcerate into the lumen of the bowel, while the superficial or Lembert's stitches become encysted. In all cases in which two rows of stitches are used in closing a wound or in performing circular enterorrhaphy, this method is usually practiced. If time permits, this method is safer than any of the single row methods.

Gussenbauer devised a figure-of-eight suture which was intended to accomplish the same objects as the Czerny-Lembert suture.

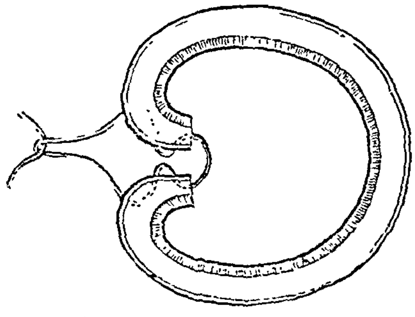


Fig. 38. Gussenbauer's suture.

It is much more complicated than the Czerny-Lembert suture, and does not bring the parts in apposition as accurately, and for these reasons is seldom employed. In circular enterorrhaphy Wölfler sutures the mucous membrane from the inside of the bowel, brings the serous surfaces in contact by Lembert's stitches and, if necessary, applies over these a continued suture of fine silk or catgut.

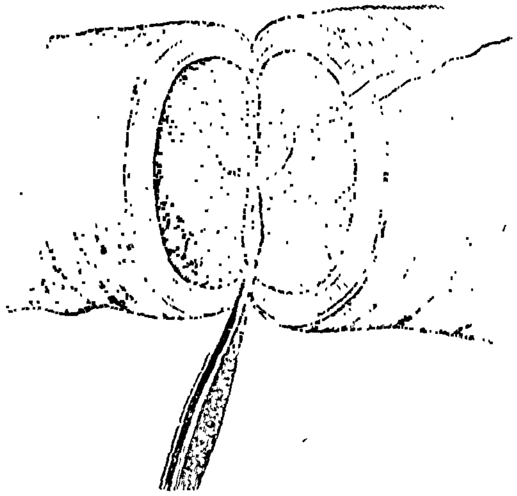


Fig. 39. Wölfler's suture. *a*, Deep sutures; *b*, superficial sutures.

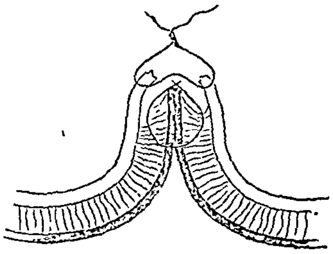


Fig. 39 *B*.

Madelung (Verh. d. Deutschen Gesellschaft f. Chirurgie, 1881) used in circular suturing small discs of cartilage made from the costal cartilage of a calf, with which he aimed to secure better approximation between the serous surfaces than by the unaided suture alone.

Bishop (*Medical Chronicle*, September, 1885) has devised and successfully employed in the lower animals an ingenious, and in his experimental work a satisfactory suture. It is a kind of interrupted shoemaker's stitch introduced on the mucous side, each suture loop being tied on alternate sides of the line of junction.

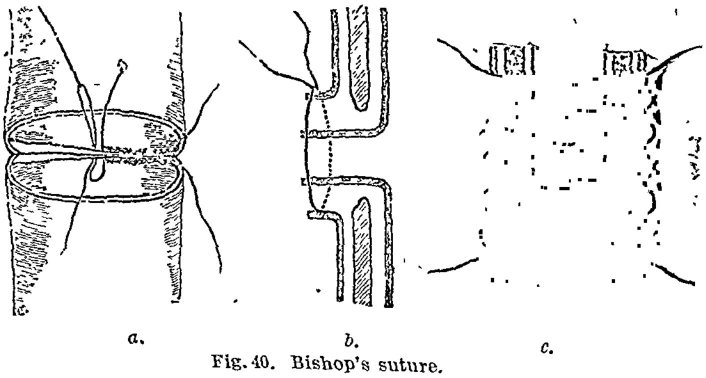


Fig. 40. Bishop's suture.

The stitches are all on the mucous side of the bowel, and as they tend to produce too much narrowing of the bowel the method will never receive the sanction of the practical surgeon.

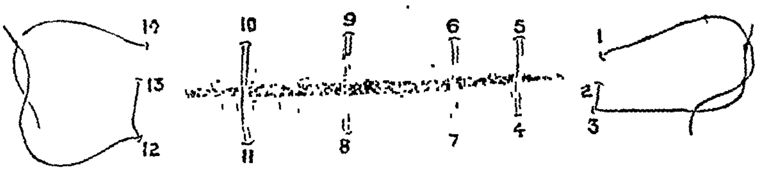
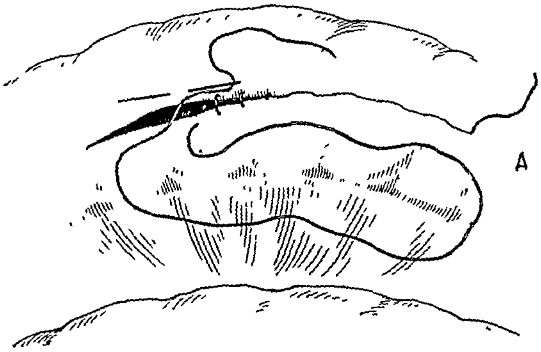


Fig 41. Greig Smith's modification of Appolito's method.

Greig Smith's modification of Appolito's suture consists in doing away with the necessity of placing a foreign body in the intestines to which the end of the suture is attached. Smith credits this suture with giving wonderfully good apposition.



H. W. Cushing ("Right Angle" Continuous Intestinal Suture. Medical and Surgical Reports of the City Hospital of Boston, 1889) has still further modified Appolito's method, and has perfected it to such an extent that it has become one of the sutures that is entitled to general recognition. The first stitch is knotted as soon as a hold upon the bowel has been obtained, and the right angle stitches are now commenced. The thread is then carried to and fro across the wound, and is finally knotted at the opposite side of the wound. The author of the exceedingly interesting pamphlet from which these facts are gleaned says: "The most satisfactory results are obtained in the human intestine by placing the points of puncture one-eighth of an inch apart, and by burying the suture to the same extent in a direction parallel to, and three-sixteenths of an inch distant from the wound edge. The suture terminates in the tough, fibrous submucous layer, and is not intended to involve the mucous membrane or penetrate the intestinal cavity. Each part of the suture should be drawn tight, so as to accurately appose the wound edges before the next is set."

Halsted's (*International Journal of Medical Sciences,* October, 1887) plain quilt suture is a compromise between Emmert's and Cushing's suture.

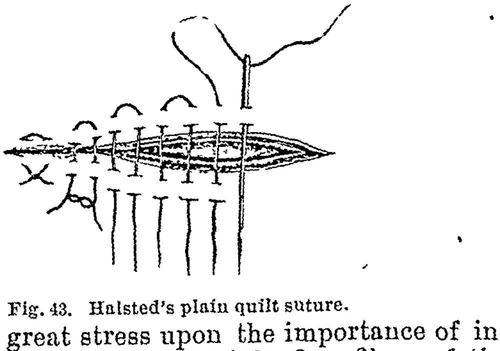


Fig. 43. Halsted's plain quilt suture.

He places great stress upon the importance of including in the sutures a few of the firm fibers of the submucous coat, which he has studied so carefully and described so well. He claims for this suture that it does not strangulate the tissues so much and obtains a firmer hold than the Lembert stitch. It is, however, a more time-consuming procedure than the ordinary method by Lembert stitches and more confusing to the inexpert surgeon. The mucous membrane has always been in the way of the surgeon in dealing with intestinal wounds. Moreau and Poutard excised the prolapsed mucous membrane before suturing, in order to prevent the interposition of this structure between the peritoneal surfaces and to secure a wider surface of healing. Kummer (*Verhandlungen d. Deutschen Gesellschaft für Chirurgie*, 1891, p. 121) has carried this procedure farther and under the name of submucous resection of the intestine, he describes a form of circular suturing in which a circular strip of the mucous membrane half an inch wide is excised on each side prior to bringing the parts in apposition by sutures.

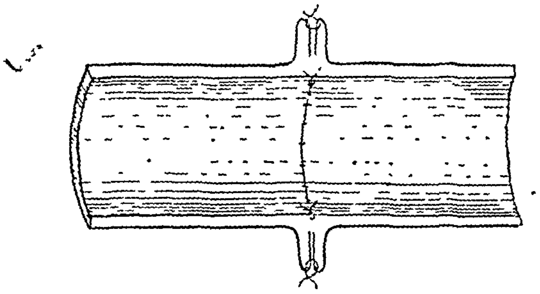


Fig. 44. Kummer's method of circular suturing.

The mucous membrane is sutured separately on the inner side of the bowel; the remaining part of the bowel wall appears in the form of a ridge, which after inversion of the peritoneal surfaces is sewed separately. The lumen of the bowel is not narrowed at the seat of suturing, and an extensive area of wound surface is included by the sutures. The method, however, is objectionable as it necessitates a maximum degree of traumatism and consumes too much valuable time.

Chaput ("Congres Francais de Chirurgie," 1889) does not excise the whole mucous membrane, as just described in Kummer's method, but removes only the epithelial lining by scraping. The mucous membrane is everted and a circular strip one centimetre wide on each side is denuded with a sharp curette. In sewing them together he brings in contact the scraped surfaces and covers the line of suturing with omentum. The invagination method, after scraping off the lower end in a similar manner, yielded such bad results in his experiments on dogs that it was never tried on man.

Robinson (*Annals of Surgery*, 1891) described a new method of end-to-end suturing. A rubber tube from four to six inches long is inserted into the proximal end and stitched around the edge. The mucous membrane of the distal end is dissected off with curved scissors and then curetted for about one-half inch. The proximal is then invaginated into the distal end, so that the peritoneal surface is in contact with denuded mucous membrane. A row of stitches around the circumference of the distal end, which, however does not penetrate thè lumen of the proximal bowel, completes the operation.

M. E. Connell (*Medical Record*, September 17, 1892) has made some very interesting experimental investigations in circular enterorrhaphy with a special view of reducing the number of stitches and knots.

After a circular resection the cut ends of the bowel are placed in position represented by Fig. 45 *a*, and the first or tight suture is inserted, as shown by *b*. After tying this suture the parts will represent the appearance as in *c*. In making the second or loose suture, the needle is inserted from without inward through the wall of the bowel, at the convex end, and passed out again on the same side; it is then crossed over the cut edges to the opposite wall, and a stitch is taken through all the coats about three-sixteenths of an inch in length, parallel with the margin of the cut edges; it is now passed back again and *a stitch is taken as before. This is repeated* until enough stitches have been taken when the needle is brought from within outward through the mesenteric end. When this suture has been inserted, and before it has been drawn tight, it appears as in *d*. When the suture is tightened the margins are inverted and the serous surfaces approximated.

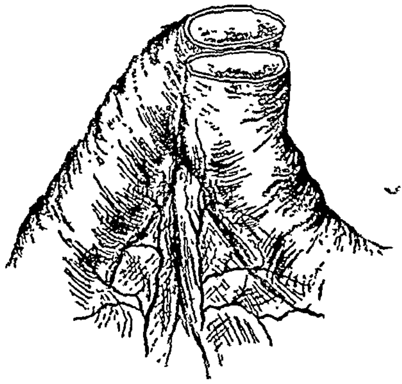


Fig. 45. Connell's suture for circular enterorrhaphy.

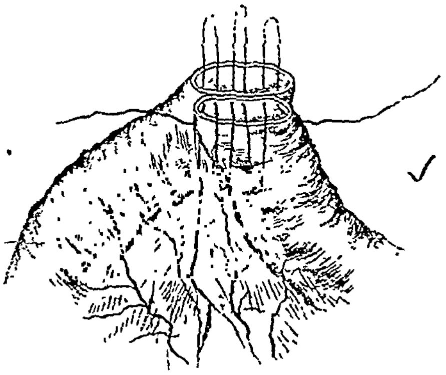


Fig. 45 *B*.

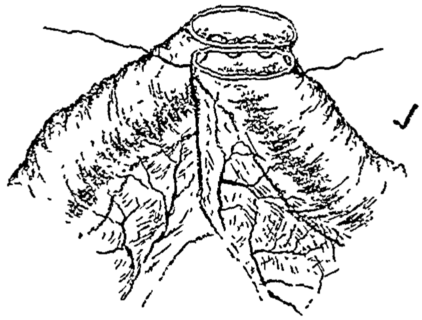


Fig. 45 *C*.

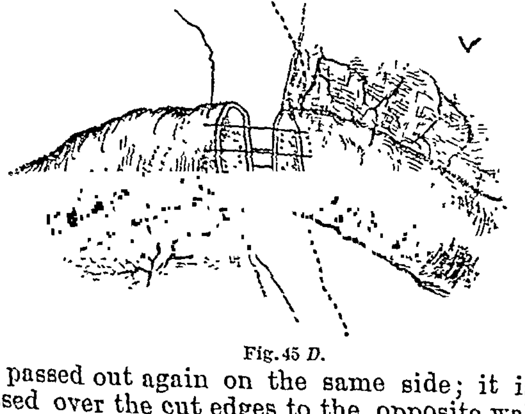


Fig. 45 *D*.

Maunsell, of New Zealand, ("A New Method of Intestinal Surgery."—*American Journal Medical Sciences*, March, 1892), has devised a method of circular suturing in imitation of nature's processes in the spontaneous cure of an invagination.

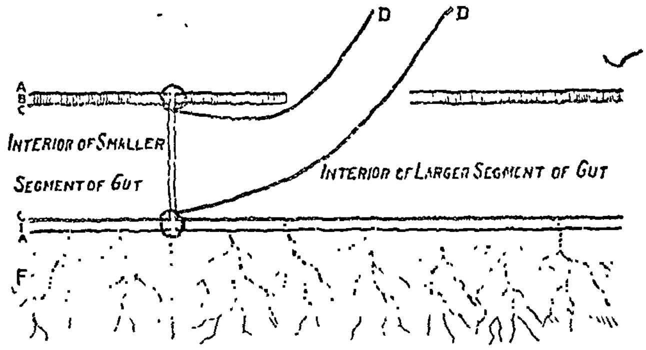

D
D
A
B
C
Interior of Smaller Segment of Gut
Interior of Larger Segment of Gut
C
I
A
F

Fig. 46 *A*. Longitudinal section of gut showing AA, peritoneal coat. BB, muscular coat. CC, mucous coat. DD, temporary sutures passed into bowel and out through longitudinal slit made in larger segment of gut. F, mesentery.

The two ends of the bowel are brought together with two temporary sutures passed through *all* the coats of the intestine. The long ends of these sutures are *left intact. One is placed at the mesenteric* attachment, and the other at a point directly *vis à vis*. These sutures are used later in effecting invagination. On the side on which the temporary invagination is to be made the bowel is incised to the extent of an inch and a half, on the convex side parallel to its long axis, as is shown in Fig. 46 *a*.

The edges of the longitudinal slit made in the bowel, which begins about an inch from its cut end, should be well turned in and brought together with continued suture of Lembert's stitches. By this simple device, the perfect union by suture of a complete transverse section of the bowel, with its circumferential peritoneal surfaces in exact position and all knots of the sutures on the inside, can be accomplished. From diagram *b* (longitudinal section of intestine, showing the relative position of the different layers of the bowel invaginated at the longitudinal slit) it may be seen that the peritoneal surfaces are in accurate apposition all around. While an assistant holds the ends of the temporary sutures, the surgeon passes a long, fine, straight needle, armed

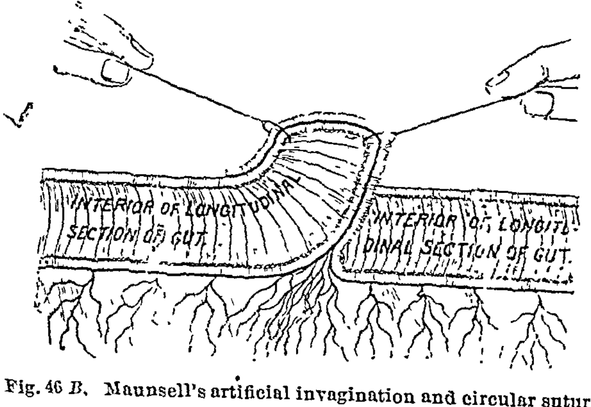

Interior of Longitudinal Section of Gut
Interior of Longitudinal Section of Gut

Fig. 46 *B*. Maunsell's artificial invagination and circular suturing.

with a stout horse hair or a very fine silkworm gut through both sides of the bowel, taking a good hold of all the coats. The suture is then worked up from the center of the invaginated intestine, divided, and tied on both sides. *In this way twenty sutures can be placed rapidly in position with ten passages of the needle.* (See diagram *c.*) The temporary sutures are now cut off short, and *the sutured ends of the* bowel painted with Wölfler's mixture of alcohol, glycerin and colophonium, and dusted over with iodoform. The bowel is then pulled back. The longitudinal slit in the gut is well turned in and closed with a continuous suture and painted with Wölfler's mixture and iodoform powder. This method of suturing has yielded excellent results in experiments *on animals and recommends itself for a careful study* to every surgeon. A serious objection to this method is the additional wound through which the temporary invagination is made.

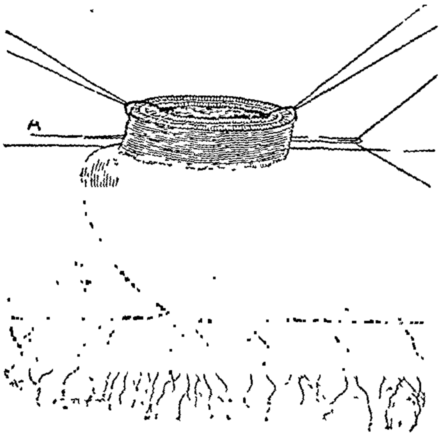


Diagram C. 'wo peritoneal surfaces in
juxtaposition .hrough both sides of the
bowel, includi sutures with one passage
of the needle.

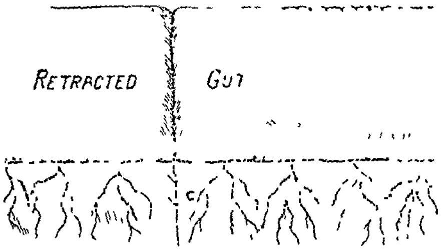


Diagram D. Appearance of bowel after completion of operation.

M. L. Harris ("Circular Enterorrhaphy; A New Method."—*Chicago Medical Recorder*, September, 1892) has devised a new method of circular enterorrhaphy which in dogs has given excellent results. The distal end of the bowel is denuded of its mucous membrane for the distance of one and one-half to two centimetres with a sharp curette. The upper end is then invaginated into the lower in such a manner that the serous surface of the upper end comes in contact with the denuded submucous layer of the lower.

Three ordinary round sewing needles of a good length are threaded with fine sterilized silk. The first needle is made to transfix the thickness of the lower or denuded end of the bowel just to one side of the mesentery and at the inner limit of the denudation. It is not drawn clear through, but only until the point projects from the caliber of the bowel a little beyond its free edge. The point of the needle is made to pick up a bit of the other end of the bowel, transversely, just to one side of the mesentery and very near to its edge, Fig. 47.

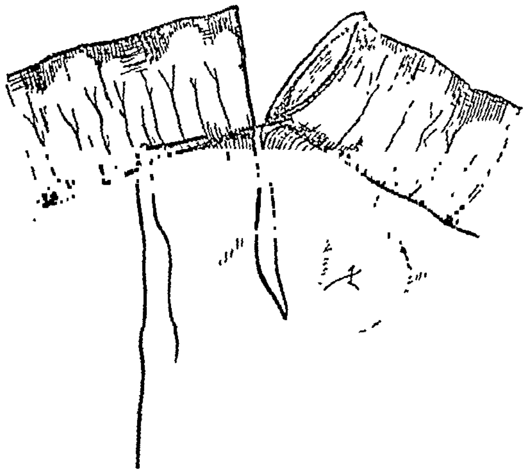


Fig. 47. 'Circular enterorrhaphy according to Harris. *a*, invagination suture.

Now, by drawing the needle back a little and using it as a lever by turning it around its point of transfixion in the lower end, it will be readily seen that the upper end, on this side, is invaginated into the lower end as far as the part is denuded of its mucous membrane. The point of the needle is then pushed on through the lower end from within outwards a *short distance in a line transversely from the first* point of entrance, where the needle is left temporarily, transfixing the bowel and holding that part of the upper end invaginated. Fig. 47, *b.* (b, partial invagination.) The same process is repeated with the second needle at a corresponding point of the bowel on the opposite side of the mesentery, while the third needle is used similarly at the part of the bowel opposite to the mesenteric attachment. As will be observed (Fig. 47, *c*), there are two rows (*c*, operation completed) of sutures around the bowel,

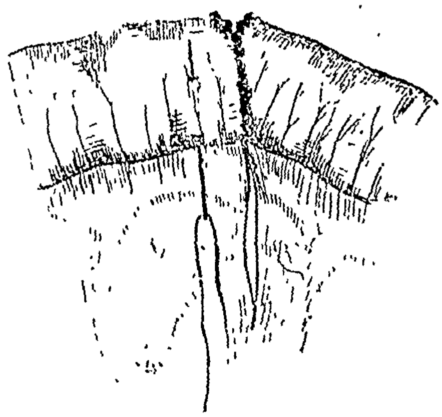


Fig. 47 *B.*

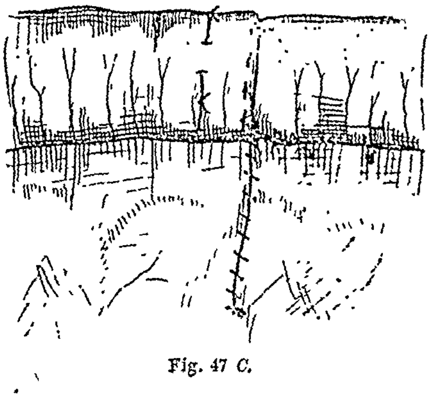


Fig. 47 *C.*

one at either end, thus permanently keeping the opposed surfaces in accurate contact regardless of the varying caliber of the bowel. It is the first row of sutures around the invaginated end to which the success of the method is due, and it was because Chaput failed to recognize it in his invagination method that his operation was a failure and every one of his animals died. Harris is of the opinion that it is not material in which direction the invagination is made when this method is employed. Although all of the animals operated on by this method lived and the specimens obtained later showed excellent results, I cannot but believe that any method which deviates from the principles established by Lembert is a step in the backward direction, and that few if any surgeons will have the courage to deviate from them when called upon to assume the responsibilities of such operations on his fellow-beings.

The tendency has recently been toward the employment of some kind of an aid or substitute for sutures in effecting an end-to-end union of the intestine. Senn ("Intestinal Surgery," Chicago, 1889, p. 168), has modified Jobert's method of invagination by substituting catgut for silk for the invagination sutures and by lining the upper end of the bowel with a flexible rubber ring. The operation is described as follows: "The upper end of the bowel which is to become the intussusceptum is lined with a soft pliable rubber ring made of a rubber band, transformed into a ring by fastening the ends together with two catgut sutures. This ring must be the length of the intussusceptum, from one-third to half an inch; the lower margin is stitched by a continuous catgut suture to the lower end of the bowel, which effectually prevents the bulging of the mucous membrane, a condition which is always difficult to overcome in circular suturing. After the ring is fastened in its place the end of the bowel presents a tapering appearance which materially facilitates the process of invagination.

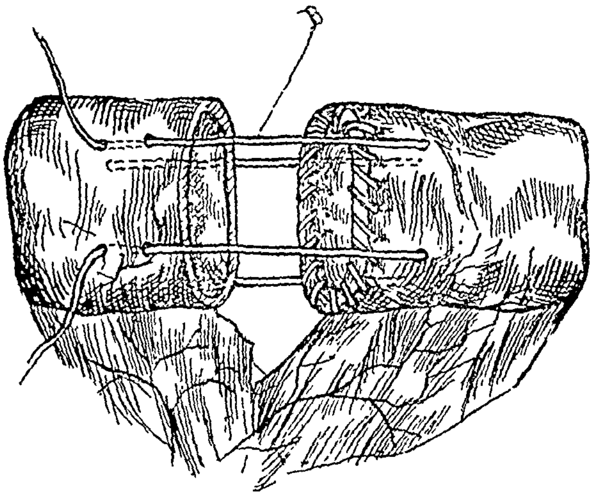


Fig. 48. Senn's modification of Jobert's invagination method. *a*, upper end lined with rin, invagination sutures in place; *b*, lower end; *c*, invagination completed, sutures tied.

"Two well prepared fine chromicized or juniper catgut sutures are threaded each with two needles. The needles are passed from within outwards, transfixing the upper portion of the rubber ring and the entire thickness of the wall of the bowel and always equidistant from each other; the first suture being passed in such a manner that each needle is brought out a short distance from the mesenteric attachment, and the second suture on the opposite convex side of the bowel. During this time an assistant keeps the opposite end of the bowel compressed to prevent contractions and bulging of the mucous membrane. The needles next are passed through the peritoneal, muscular and submucous coats at corresponding points about one-third of an inch from the margin of the opposite end of the bowel, and when all the needles have been passed an assistant makes equal traction on the four strings, and the operator assists the invagination by turning in the margin of the lower end evenly with a director or probe, and by gently pushing the rubber ring completely into the intussuscipiens. The invagination is accurately made, the two catgut sutures are tied only with sufficient firmness to prevent disinvagination should violent peristalsis follow the operation. The invagination itself effects accurate, almost hermetical sealing of the visceral wound. The intestinal contents pass freely through the lumen of the rubber ring from above downwards, and extravasation from below is impossible, as the free end of the intussuscipiens secures accurate valvular closure. After a few days the rubber ring becomes detached, and by giving way of the catgut sutures is again transformed into a flat band, which readily passes off with the discharges through the bowels. The invagination sutures of catgut are gradually removed by substitution on the part of the tissues, hence the punctures in the bowels remain closed either by the catgut or by the products of local tissue proliferation; and thus extravasation is prevented."

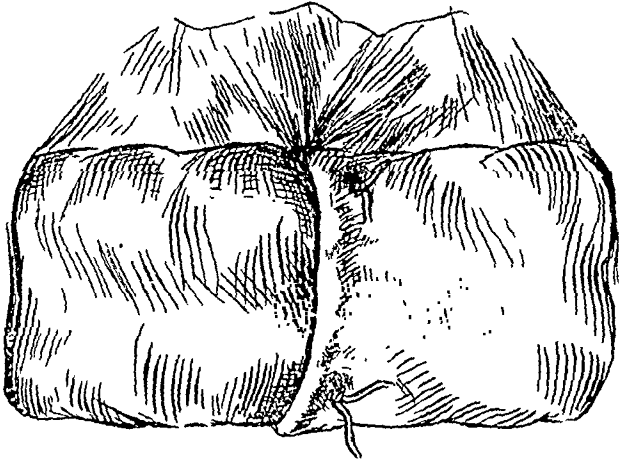


Fig. 48 *C*.

Neuber used a hollow cylinder of decalcified bone with a deep groove in the center as an aid in circular enterorrhaphy. (Fig. 49, *a*.)

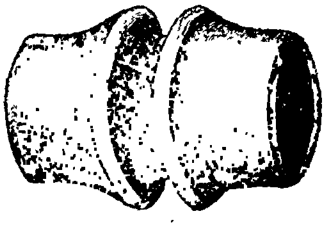


Fig. 49. Neuber's method. *a*, hollow cylinder of decalcified bone; *b*, longitudinal defect in bowel, showing location of cylinder, sutures, and catgut ligature.

After suturing the mucous membrane according to Wölfler's method so far that only an opening is left large enough to insert the cylinder, this is introduced in such a way that the transverse groove corresponds with the line of suturing when the serous surfaces are brought in contact by Lembert sutures. In order to fasten the united bowel securely upon the bone tube, a catgut thread is passed with a round needle through the mesentery, and tied around the bowel with sufficient firmness to press the margins of the sutured ends of the bowel into the groove. (Fig. 49, *b*.) This method has been employed in a number of cases with good results.

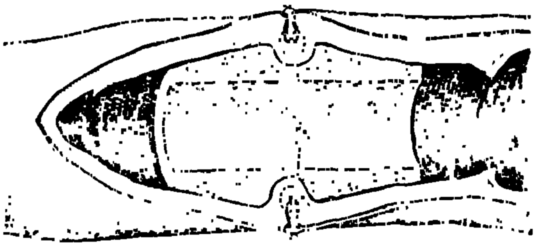


Fig. 49 *B*.

One of the most recent devices to take the place of sutures in restoring the continuity of the bowel in complete transverse wounds is the Murphy button. (*New York Medical Record*, December 10, 1892.) It is an exceedingly ingenious appliance, but its mechanism as far as uniting the ends of the bowel is concerned is no improvement upon the rings employed by Denans more than half a century ago. In both methods the margins of each end of the bowel are compressed and strangulated by the instrument with the intention of causing gangrene, and the resulting union is accomplished by adhesions between the serous surfaces outside of the grasp of the instrument. Both methods have also this in common, that a large foreign body is left in the intestinal canal which may become a source of danger on its way to the distal end of the alimentary canal. There is substantial ground for the two pertinent questions propounded by Henry Morris ("International Encyclopedia of Surgery," 1884, p. 944) in commenting on the procedure of Denans: "Who would venture to leave the intestine in this manner in the belly? Who would guarantee that the metallic tubes would not perforate the intestine?" Any instrument, suture or ligature used in effecting the continuity of a wounded or divided bowel that produces gangrene must be looked upon as a source of danger. It is impossible to effect an aseptic necrosis in the interior of the bowel, and dead tissue inhabited by pathogenic microbes always constitutes a source of danger. It is easy enough to produce gangrene, but we are powerless in limiting its extension in this locality. The limited area of living tissue brought in contact outside of the rings of Denans or the Murphy button will not always prove adequate in the protection of the peritoneal cavity against perforation and its immediate result—septic peritonitis. I have knowledge of a number of cases in which the parts approximated by the Murphy button were found completely separated at the post-mortem examination. As a means of end-to-end union of the intestine, the Murphy button is certainly inferior to Denans' procedure or the method that will be next alluded to, because the lumen of the connecting part is not large enough as a temporary outlet for the intestinal contents above the seat of operation. The size of the button is also a very serious objection. I have operated for intestinal obstruction produced by a gallstone less than an inch in diameter which had become impacted in the lower end of the ileum, and other surgeons will recall similar instances. Keen (*Annals of Surgery*, June, 1893) gives the post-mortem record of a case of malignant disease of the colon in which an anastomosis was established by using a Murphy button one inch in diameter. The patient survived the operation forty-seven days. The anastomotic opening had become reduced one-half in size by contraction during this time. In a postscript he says: "The button should be abandoned for intestinal or gastro-intestinal anastomosis."

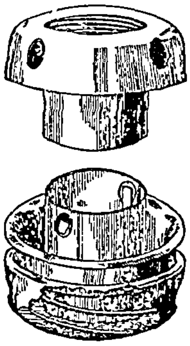


Fig. 50. Murphy's button.

If this warning of so eminent a surgeon foreshadows the final verdict of the profession in regard to the use of the button for anastomotic purposes it will never come into use in end-to-end approximation.

A few days ago I received an interesting brochure from Adelbert Ramaugé, professor of surgery in the medical faculty of Buenos Ayres, entitled "Enteroplexie," a paper which he read at a meeting of the International Medical Congress of South America, January 20, 1893, and which received the first prize, a gold medal, from the Peruvian government. In this paper I find the description of an instrument which is intended for the same purpose as the Murphy button and which bears a strong resemblance to it.

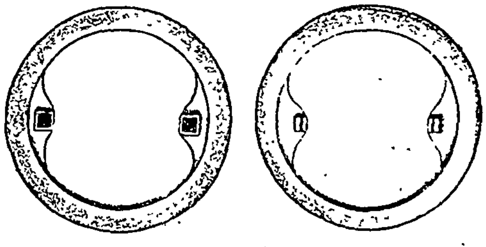


Fig. 51 *A*.

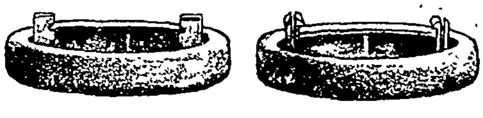


Fig. 51 *B*.

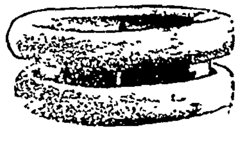


Fig. 51 *C*.

Fig. 51 *A*. Ramaugé's method of end-to-end approximation. *a*, platinum rings, front view; *b*, platinum rings, side view, showing male and female connecting parts; *c*, rings joined together; *d*. longitudinal section of bowel, showing position of rings and included parts.

Its mechanism as far as the end-to-end approximation is concerned is the same as that of the button.

The rings are made of aluminium. The connection between the rings is made by two instead of one part. This is a decided advantage, as the size of the temporary outlet is thereby increased. As the rings are composed of aluminium, they are much lighter than the button, and for this reason less likely to become arrested on their way through the intestinal canal. The objections which have been made against Denans' rings and the Murphy button otherwise apply with equal force to this procedure.

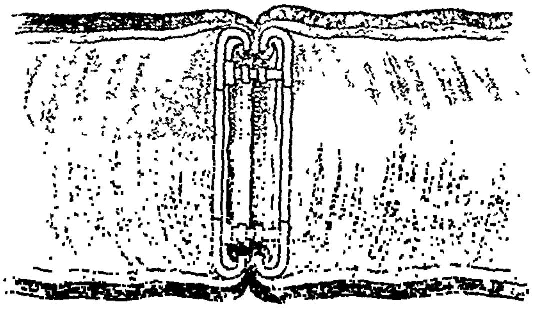


Fig. 51 *D*.

The revival of intestinal anastomosis by Billroth and Senn has opened up a new field for experimentation with different kinds of sutures and their substitutes. The author ("Intestinal Surgery," Chicago, 1889) made many operations on dogs by suturing the two visceral wounds which were intended to form the anastomotic opening by the Czerny-Lembert method, and notwithstanding that the greatest care was exercised in carrying into effect the antiseptic details, and with a view of a perfect technique, nearly 50 per cent. of the animals died, either from the immediate effects of the operation or from complications resulting from the operation. For the purpose of gaining time and doing away with the evil accruing from too many sutures, and finally with the intention of securing a greater surface of approximation of the serous surfaces and complete rest for the parts it is intended to unite, he substituted for the sutures approximation plates. The idea was suggested to him by Dr. M. E. Connell, superintendent of the Milwaukee County Hospital. The first experiments were made with plates of wood, lead, gutta percha and other indestructible substances, nevertheless nearly all of the animals recovered. The material for the plates that was found the most useful after many trials was decalcified bone. The appearance of the plates and their method of use in making an intestinal anastomosis are well shown in the accompanying illustration taken from the last edition of Esmarch's "Chirurgische Technik."

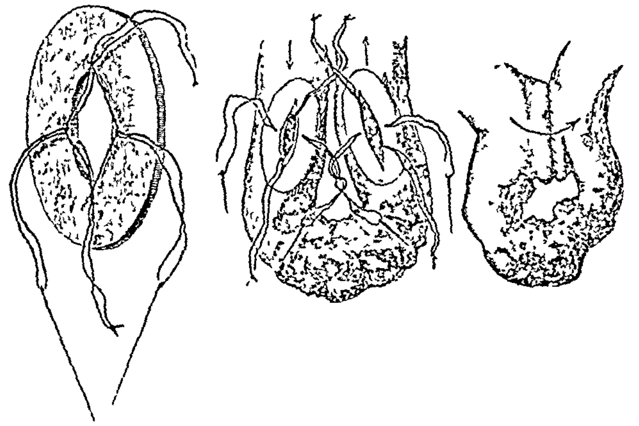


Fig. 52. Senn's method of performing intestinal anastomosis. *a*, perfora[illegible] e with sutures attached; *b*, plates inserted [illegible], in bowel on each side of obstruction, lateral [illegible] margin of wound on each side; *c*, the four approximation sutures tied, cut short to the knot, and serous surface over margins of plates sewed together with continued suture.

The serous surfaces included between the plates are scarified for the purpose of securing early and firm adhesions. The plates furnish the necessary mechanical support until firm adhesions have formed when they disintegrate and pass away in fragments. The two lateral sutures fall into the lumen of the bowel. The mistake was first made in operations on man in making the perforation in the plate and the longitudinal wound in the bowel too short, hence the anastomotic opening was too small from the beginning. For gastro-enterostomy and intestinal anastomosis, I now use moist plates (kept between glass plates in an antiseptic solution) with a perforation at least three inches in length and make the visceral wounds correspondingly long. Since I have adopted this change, I have had no trouble with the anastomotic opening. Different kinds of material have been substituted for the decalcified bone. Abbe and Matas used catgut rings, Brokaw segmented rubber ring, Robinson rawhide and segmented rubber plates, Davis catgut mats, Stamm cartilage plate, Shrively and Simonson chromicized gelatin plates, Dawbarn potato plate, von Baracz Swedish turnip plate, and a French surgeon has recently proposed plates made from shavings of the hoofs of horses. H. Littlewood (*The Lancet*, April 16, 1892) has suggested a modification of Senn's plates, with the idea of doing away with the four stitches attached to the upper and lower margins of the apertures of the plates, of performing the operation more quickly and of ensuring a good opening between the two pieces of the intestine.

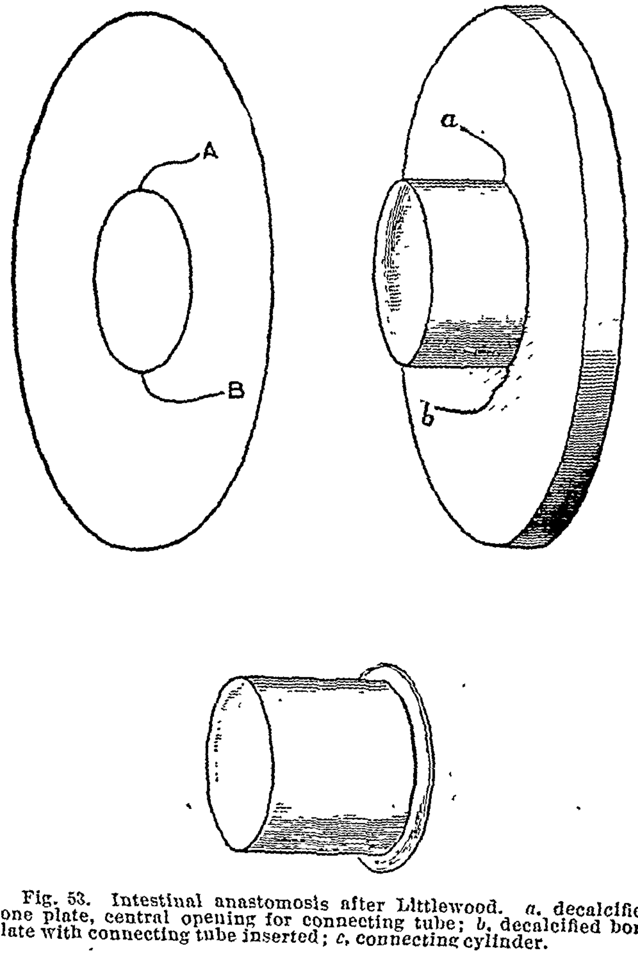


Fig. 53. Intestinal anastomosis after Littlewood. *a*, decalcified bone plate, central opening for connecting tube; *b*, decalcified bone plate with connecting tube inserted; *c*, connecting cylinder.

The suggested modification is to fix a tube of decalcified bone (*c*) into the aperture of one of the plates (*b*). This should be made to accurately fit into the aperture of the other (*a*); by this method the two plates could be held together, and the two parts of the intestinal walls between them brought evenly into contact with each other. He suggests that it might be well to have a piece of fine silk attached to each of the ends of apertures (as marked *A a*, *B b*, in diagrams *a* and *b*), so that by tying *A a* and *B b* together greater security would be made. The intestinal walls around the margins of the plates should be attached by a few sutures.

Willy Sachs (*Centralblatt f. Chirurgie*, October 4, 1890) has described a very similar modification. He proposes the use of an appliance resembling in form a sleeve stud, perforated in the middle. This is made up of two decalcified bone plates fixed together, yet separated to a small extent from each other as far as the uniting portion immediately around the central portion. A longitudinal incision having been made in each of the opposed portions of intestine, each disc is inserted into the intestinal canal on either side, and the intestinal anastomosis is thus readily and speedily established. Sutures are then applied through the serous coat on each side wherever there is a tendency to protrusion of the mucous membrane. He tested this method so far only on rabbits.

A. W. Mayo Robson ("A Method of Performing Intestinal Anastomosis by Means of Decalcified Bone Bobbins."—*British Medical Journal*, April, 1893), uses a contrivance very similar to that of Sachs' which he calls decalcified bone bobbin. He has used this method with success in two cases.

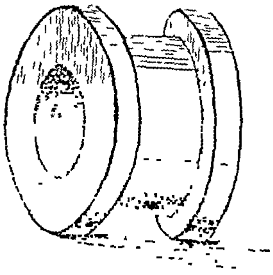


Fig 54. Robson's decalcified bone bobbin

In making an intestinal anastomosis, each end of the tube is inserted into the bowel through a longitudinal incision and fastened to the connecting portion by a continued marginal suture. After this has been done on each side the serous surfaces are united by superficial sutures.

IV—PRESENT STATUS.

Enough has been said on the history and technique of the intestinal suture to show how much study, time, ingenuity and experimentation have been expended in its perfection, and yet the task has not been completed. The search for new sutures and their substitutes at the present time is sufficient proof that perfection has not been reached. Deviation from the legitimate path of investigation has done much towards retarding genuine progress. In this light must be viewed all attempts to ignore the principles established by Lembert and the employment of such foreign substances in the intestinal canal as means of approximation that necessarily produce gangrene, and of sufficient size to constitute an intrinsic source of danger. In the treatment of longitudinal and incomplete transverse wounds suturing by Czerny-Lembert sutures yields the best results. If time is an important factor a single row of Lembert stitches will answer the purpose. About six sutures to the inch are required. Halsted's advice to include in the stitches fibers of the firm submucous coat is important and should never be ignored. As a rule the line of suturing should be transversely to the long axis of the bowel in order not to encroach too much upon its lumen. Fine aseptic silk and ordinary sewing needles are to be employed. The inner row of sutures must include all tunics of the bowel with the exception of the peritoneum; the outer all of the tunics minus the mucous membrane. The inner sutures ulcerate through into the bowel, the outer become encysted. Interrupted sutures are safer than the continuous, but in prolonged operations and when the patient is feeble, the latter can be substituted for the former as a time saving measure. Extravasation during the operation is best prevented by digital or elastic compression on each side of the wound. The latter is made by passing a piece of fine aseptic rubber tubing through an opening in the mesentery made with a piece of hemostatic forceps, and tied around the bowel sufficiently firm to prevent escape of its contents.

If the bowel is completely divided its continuity can be restored with the greatest degree of safety by circular enterorrhaphy or invagination by the author's method. The latter is not applicable in operations for intestinal obstruction, as in that case the upper end of the bowel is larger than the lower into which the invagination must be made. Before suturing is commenced each end of the bowel should be beveled at the expense of the convex side, as advised by Madelung many years ago, as by doing so there is less danger of the sutures causing a dangerous degree of stenosis and the liability to marginal gangrene on the convex side is also greatly diminished thereby. If the lumina of the bowel ends are unequal in size, the obliquity should be greatest on the side of the small end. Circular suturing is performed in the same manner as suturing of incomplete wounds. The greatest care is required on the mesenteric side, as it is here where perforations occur most frequently. After applying the deep row of sutures the first Lembert stitches are applied on each side of the mesenteric attachment in order to secure serous approximation in this locality. The Lembert stitches must be tied only with sufficient firmness to approximate the serous surfaces without subjecting the included tissues to harmful linear compression. Puncturing of visible vessels should be avoided as much as possible. The mesentery is sutured in such a manner that it will aid in holding together the sutured end. Senn ("Intestinal Surgery," Chicago, 1889) has proposed and practiced omental grafting as a valuable aid in circular suturing. This additional protection against perforation and peritonitis is especially indicated when the tissues at the place of suturing have undergone pathological changes in consequence of intestinal obstruction or inflammation. A strip of omentum about an inch wide and long enough to cover the entire circumference of the bowel is used for this purpose. Prior to planting the graft the serous surface of the bowel half an inch from the line of sutures on each side is scarified, and the under surface of the graft is dealt with in the same way. The graft is fastened by two catgut sutures on the mesenteric side, including the mesentery and both ends of the graft. The stitches are made parallel to the mesenteric vessels. The grafts become firmly adherent within a few hours, and in the course of one or two days are vascularized by new vessels growing into them from the scarified surface of the bowel. If any internal aids to circular suturing are used they should be composed of absorbable material and employed in such a way as not to produce marginal gangrene, and with a central opening large enough to allow free fecal circulation. I cannot but regard mechanical supports made of metallic substances as dangerous. The objections made to them do not apply with equal force to the decalcified bone tube of Neuber, the sleeve button of the same material, of Sachs and Littlewood, and the bobbins of decalcified bone of Robson. These appliances merit a trial and will undoubtedly be improved upon in the future.

Lateral anastomosis as a surgical procedure has a great future. I still remain partial to the use of decalcified bone plates as a substitute in part for sutures. Abbe has discarded the use of his catgut ring and now advocates long incisions and suturing. If the plates are made with an oval perforation three inches in length the same object is realized in a much shorter time and with a greater degree of safety. I never had any faith in rings as a means of approximation. The plates bring into accurate contact large serous surfaces and serve at the same time as splints for the injured part. They serve the double purpose of sutures and splints. The other appliances of decalcified bone that have been enumerated may answer the same purpose as the anastomosis plates, but with none of them can the pressure to which the included margins of the visceral wounds are subjected be regulated with the same degree of certainty, and none of them approach so near the function of splints. I have no doubt that future experiments will result in the discovery of other and safer appliances that will be vastly superior to anything I have mentioned, and that if they do not abolish, will at least greatly limit the present field of the intestinal suture.

## ORIGINAL ARTICLES.

### A CASE OF CHRONIC GLANDERS, WITH RECOVERY.

Read before the Section on Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

BY BAYARD HOLMES, B.S., M.D.
CHICAGO, ILL.

ABSTRACT.

This paper begins by showing that the bacillus maleus is the prime etiological factor in glanders;

That glanders is allied to the chronic infectious diseases, and its normal host probably one of the domestic animals;

That the bacillus is an obligate parasite of its host;

That it resembles morphologically the other bacterial parasites that produce chronic infectious diseases in man, especially tuberculosis and leprosy;

That the occurrence of glanders in man is rare, and that it presents itself in two forms: one acute and rapidly fatal, terminating as a rule inside of two or three months at the farthest; the other chronic, from which the patient may recover after one, two, four or five years of disease;

That the occurrence of glanders is usually due to the association of man with domestic animals, or persons suffering from the disease.

CASE.

The case which I have to present was referred to me in April, 1889, by Dr. Holdsburg, of Granville, La Salle county, Illinois, with the following history: The patient, Charles Mason, was a well-developed young man twenty-two years old. He had always been well and strong and had lived on a farm all his life. He worked on the farm all the time, except when in school, since old enough to be useful. In December, 1889, one of his horses was taken sick, became stiff and lame, had "running from the nose" and loss of breath, and died at the end of a week. The mate to this horse became sick and had several sores, which the patient dressed and took care of during the month of December. Sometime during the middle of December the left finger became sore and was treated by Dr. Holdsburg, who pronounced it a felon. It was very painful, but there was no adenitis or lymphangitis, and no rise of temperature or chill. Before the felon was entirely healed five foci appeared in five different parts of the body—one at the elbow, one at the vertex, and one on the right side of the lower maxilla, one in the right thigh and one in the right calf. Three of these foci were open when I first saw him. The one on the lower maxilla and the one in the calf were still unopened. These foci appeared almost simultaneously about the first of January, 1889, and within three weeks after the beginning of the so-called felon. They each began with a sharp stinging pain, much like a bee sting, with deep swelling and little or no œdema and redness. When I saw the patient first the temperature was 100 and the pulse 92. The history showed that there had been no rise of temperature, and no other symptom of acute sepsis during the three and a half months from the beginning of the explosion, the first week in January, to my first observation on the 12th of April. The patient was then somewhat reduced in weight, but not emaciated. He was walking on crutches; the right leg was flexed on account of the swelling below the soleus. The skin over the focus on the right maxilla was thinning from pressure atrophy, but there was no œdema or redness such as is found about staphylococcus abscesses. The same observation was made on the calf. The open abscesses on the elbow, the vertex and the thigh, presented somewhat the appearance of tubercular abscesses, but with this difference: the abscess wall was covered with a firm, hard, almost shot-like, bright red granulation, and the exuding secretion was sanguinolent. The diagnosis of a suppurative disease was excluded by the absence of œdema and redness, of proximal adenitis and by the persistent absence of chills and rises of temperature. The possibility of tuberculosis was considered and the diagnosis rested between glanders and tubercular infection, with a strong preponderance in favor of glanders, both on account of the atypical appearance of the granulations and the history of the case. The indication seemed to be for immediate and vigorous operative interference.

Having provided myself with the assistance of Dr.

Frank S. Billings, D. V. S., who was well acquainted with glanders in domestic animals, operation was undertaken under the strictest antiseptic precautions—first to secure from the unopened focus in the leg uncontaminated pus for inoculation in guinea pigs for diagnostic purposes, and second, to mechanically remove the infected tissues. After opening the skin with the cautery a small amount of pus was taken up as it welled into the cautery wound and immediately inoculated into two guinea pigs and three rabbits. These animals were isolated and the two guinea pigs developed the typical orchitis, and the two rabbits died between three and four days after the inoculation of glanders septicemia. The *evidement* of the focus was completed through a larger cautery wound which opened the infected area from an inch and a half below the popliteal space the lower third of the tibia. It was impossible to say exactly where the infection lay, but it seemed to be in the fascia separating the bundles of the soleus and gastrocnemius. After *evidement* with the sharp spoon, the cavity was swabbed out with a saturated solution of zinc sulphate. It was then packed with iodoform gauze, wet in a saturated solution of iodid of potassium. The other foci were treated in the same way, with this addition: that those foci connected with the bones, three in number, had the *evidement* or chiseling extended to the removal of the bone sequestrum and the immediately adjoining healthy bone. Five operations were performed during the first anæsthesia.

There was never any rise of temperature and little inconvenience to the patient from these operations. The wounds healed with exceeding slowness and usually required from three to six *evidements*, though the one in the jaw which was operated upon under the most favorable circumstances healed during the week following the first operation.

The patient became so well acquainted with the symptoms of the localization of the infection that he would call my attention to a spot in which he had felt the characteristic sting and subsequent pain. I marked these points with ink and after anæsthetizing the patient, cut down upon them and either removed them as I would a tumor, or cauterized the focus extensively with the actual cautery and treated it by the open method. In this way during two years and a half, the patient was anæsthetized twenty times, and new foci were opened or old ones scraped out. Only one case of adenitis was observed and this was treated by excision. The number of foci was *fourteen*, namely:

1. The primary focus on the left middle finger.
2. The right thigh.
3. The front of the tibia.
4. The right forearm.
5. The right lower maxilla.
6. The vertex.
7. The right groin, an adenitis.
8. The right popliteal space.
9. The right gluteal region.
10. The left gluteal region.
11. The left calf.
12. The right calf.
13. The recurrence in right tibia.
14. The front of the right thigh.

It seems to me that this case is worthy to be reported because the history is good, the diagnosis was confirmed by inoculation experiment, and recovery has followed rational and persistent surgical procedure. An additional interest is to be taken in the case because of its rareness, and because it was difficult at first to say that it was not tubercular explosion.

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# AN ORIGINAL METHOD OF RESTORING THE ALVEOLAR ARCH IN ANTERIOR CLEFT OF THE HARD PALATE AND OF CORRECTING THE DEFORMITY OF THE ALA NASI IN HARE-LIP.

Read in the Section of Surgery and Anatomy, at the Forty fourth Annual Meeting of the American Medical Association.

BY JOHN A. WYETH, M.D.
NEW YORK.

The operation I desire to submit to your consideration is intended more perfectly to correct the deformity of the lip, and more particularly of the nose, in anterior cleft of the palate and alveolar arch.

It is a common experience that after plastic work on the soft parts in cases of complete hare-lip and cleft palate, which brings the lip into satisfactory position, the *ala nasi* of the affected side still remains misshapen, flat and sunken. The *ala nasi* rests normally upon the nasal margins of the superior maxilla.

If the maxillæ are normal, and the alveolar arch in front complete, each *ala nasi* rests upon a bony surface and foundation on the same plane, and the two are naturally symmetrical. If one is deficient, the nostril of that side sinks down and out of line just as the corner of a house sags when the underpinning is not high enough. The operation of *advancement of the anterior portion of the upper jaw on the short side* is designed to build up the foundation.

In certain cases of anterior cleft the inter-maxillary process is adherent to one side (the long side), and projects in a clumsy fashion usually to the front and upwards. In these cases the old method of bending or forcing this misplaced process over to the short side and holding it in contact until union is secured, completes the arch and gives a suitable foundation for successful plastic work on the nostril and lip.

When, however, the inter-maxillary process is absent or largely deficient we find one *ala nasi* resting upon a normal portion of the alveolar arch on one side, while on the other it recedes from one-half to one-quarter inch, resting upon the imperfect maxilla and alveolar process. In four such cases I have devised and carried out successfully the following procedure:

About one-quarter inch from the edges which are to be brought into apposition, a hole is drilled through the bone and a strong silver wire carried through, ready for being tightened. The edges are now freshened by slicing off the mucous membrane lining the bone with a strong scalpel or scissors. With a strong pair of straight scissors in very young infants, or a bone cutter the alveolar arch and maxilla of the short side is divided about half way of its length and at a right angle to the dental surface. By introducing a very strong cord of silk or wire into this fissure, and making strong traction forward on this, the undivided portion is fractured and the loosened part, by tightening the silver suture previously introduced, is brought forward, where it is firmly anchored by twisting the wire.

Since the nutrition of the bone in its new position is derived temporarily from the adherent soft parts, these are not disturbed until the bone unites in the new position. From six to eight weeks should elapse before plastic work on the lip and nose is undertaken.

By advancing the bone in this manner, the anterior segment of the alveolar arch is completed and the *alæ nasi* of the two sides rest on the same plane.

Of course the plastic work on the lip and nose must be skillfully done, but the principles here are well established and well known, and it would not become me to take more of your time with these. It is, however, well enough to dwell on the importance of early operations, always within the first years of life, and preferably within the first early weeks after birth, provided that *the nutrition of the patient is good or can be improved by forced feeding;* then, as soon as the patient is sufficiently improved.

When these cases are left to the sixth or twelfth year the muscles of the *ala nasi* on the short side are partly paralyzed from disuse, and the nostril can scarcely be made to look as well as its fellow.

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## A NEW METHOD FOR THE RADICAL CURE OF VARICOSE VEINS.

Read in the Section of Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

BY ERNEST LA PLACE, A.M., M.D.

PROFESSOR OF SURGERY, PATHOLOGY AND CLINICAL SURGERY IN THE MEDICO-CHIRURGICAL COLLEGE AND HOSPITAL; SURGEON TO THE PHILADELPHIA HOSPITAL; SURGEON AND PATHOLOGIST TO ST. AGNES HOSPITAL, PHILADELPHIA.

Varicose veins of the lower extremities are among the most persistent and tormenting afflictions of adult age, not only because of our comparative ignorance of the absolute causes of the condition in the majority of cases, but especially because in the few cases where the cause can be clearly made out, it is almost a matter of impossibility to remove it. Varicose veins are produced either by an increased blood pressure within the veins, or by a diminished resistance of the vessel walls, or both. Whatever be the special cause, the eventual result is nearly always the same—a permanent state of dilatation and consequent thinning out of the walls of the veins on account of the sluggish circulation and increased blood pressure. We know how this condition reaches its climax in a rupture of the vein, giving a serious hemorrhage on the one hand, or if the affected vessels be capillaries, the varicose ulcer is the result. It would be useless to go farther into the pathology of the condition than saying that the initial stage of the trouble is a trophic disturbance, sometimes hereditary and sometimes acquired. The vessels being practically in an aneurismal condition, the question underlying the rapid and effectual cure resolves itself into the principle of cure of an aneurism. This we know to be beyond discussion; the complete obliteration of the dilated blood vessel by mechanical means, by chemical means, or physical means, or two or more of these combined. Inasmuch as varicose veins are not only dilated but lengthened and thrown into loops and curves, the aneurismal tumors which result offer a very extensive area for the application of the various methods of obtaining the obliteration of the veins. The walls become immensely thickened because of the migration of white blood corpuscles that have subsequently built fibrous tissue, so that there is no tendency for these vessels to contract; the skin has become irritated and eczematous, and at last the whole limb becomes more or less affected.

Of the various forms of palliative treatment we will say but little, as this appeals directly to our common sense and might be consistently adopted as an accompaniment of whatever form of radical treatment is used. All, however, consist in prescribing rest and some form of external support.

Of the radical means, the choice lies between acupressure, ligature and excision.

In *Acupressure* a flat needle is passed under the vein and a figure-of-eight thread is applied over the ends. This is done at short intervals, hoping to obliterate by coagulation the intervening section of vein. This procedure is tedious, complicated, very seldom accompanied by success, and exposes the limb to dangers of sepsis and embolism.

*The Ligature* is made by a small incision over the vessel and an aneurism needle passed around it threaded with catgut. This is done above and below the varicose spot and the ligature cut short.

*Excision.*—Excision is done in practically the same way. The vein is carefully dissected out, and being ligated above and below, the intervening portion is excised. Where any great length of vein is involved this is of course impracticable.

Molliere (211, March 30, 1890), employs a solution of 1 part of iodin, 9 of tannin and 200 of water, of which he injects a few drops directly into the veins with a view of producing coagulation. Ricard (100, Oct. 30, 1890). Phelps also advocates the multiple ligature of varicose veins being, however, fully aware of the strictly local effect, and of the recurrence of the condition. Goodwin (2, Oct. 5, 1889), advocates the injection of ½ minim of carbolic acid into varicose veins, an Esmarch tube having first been applied above. Patterson (2, Sept. 25, 1890) after placing harelip pins, injects perchloride of iron. All of these methods are painful, tedious and so strictly limited in their application that complete relief would necessitate the same procedure over the whole area of dilatation, which would overtax the endurance of a patient.

Recognizing the deficiencies of these modes of treatment, we proceeded to treat the condition in a manner that would remedy it at once. The two great channels that drain the superficial venous circulation of the leg are the internal or long saphena and external or short saphena veins. These and their tributaries are the vessels affected in the varicose condition. The lack of support, or any other cause act simultaneously upon every branch of the vein. The long saphena vein commences in a minute plexus on the dorsum of the foot: it ascends in front of the inner ankle and inner side of the leg, behind the inner margin of the tibia. It drains all the anterior surface of the leg and the whole circumference of the thigh.

The external or short saphenous vein drains the posterior portion of the leg and empties into the popliteal vein between the two heads of the gastrocnemius muscle. This being the case it occurred to me that if obliteration of the varicose veins was the essential factor in the cure, it might be pc [illegible] to obliterate all the surface venous circulation by ligating the long saphenous vein at the saphenous opening and the short saphenous vein between the heads of the gastrocnemius. Blood stasis must necessarily follow and a certain amount of œdema. Elevation of the limb, and gentle compression with raw cotton and a flannel bandage soon overcomes this. Rest in bed adds the final requirement to what seemed to me *a priori* the ideal mode of obtaining a wholesale obliteration of all the varicose veins of a limb, hence the cure.

The first case operated upon was a very stout gentleman 54 years of age, who sustained a fracture of the left leg while in the army, and soon afterwards developed varicose veins in both legs accompanied by a varicose ulcer in the left leg. For twenty years this condition had existed and on the 12th of October, 1891, cocaine having been injected about the saphenous openings in both thighs the long saphenous vein was ligated. The vein can be found very easily, immediately under the integument and superficial fascia, one and one-half inches below Ponpart's ligament and one and one-half inches from the inner side of the thigh. The vessel is isolated and a silk or catgut ligature applied. The incision need not be more than one inch in length. A suture closes the wound, and it is finally sealed with a film of cotton and iodoform and collodion. The same operation was performed upon the short saphenous vein by making an oblique incision about two inches below the center of the popliteal space. The vein is generally distended and presents itself in the area that is thus exposed. These two veins were then ligated after the above fashion in our patient. There was immediately a hardened and distended condition of all the varicosed veins, which were quite tortuous. A snug cotton compress and bandage was applied from the leg to the upper femoral region and the limbs slightly elevated upon pillows. The operation was not accompanied by pain and at no time subsequently but a sense of *tightness*, as he expressed it, all over the limb. On the third day the bandage was removed to observe the changes. The veins stood out plainly with a hard nodular appearance, easily comparable to a rope under the skin. All about them was a yellowish green coloration much resembling what occurs in an ecchymosis which is being absorbed; and which no doubt was due to some red blood corpuscles that had exuded through the distended stomata of the veins and which on disintegrating left their hemutin in the tissues. In two weeks the patient was allowed to rise. The dressing had been renewed every three or four days, and no change or symptoms could be observed except a gradual hardening of the veins and simultaneous diminution of their size. At the end of the second week the patient felt quite relieved and walked about with comfort. The small ulcer on the left leg healed very kindly, after being curetted and covered with iodoform gauze. Since then, this patient has been engaged in superintending a coal mine near Scranton, Pa., and has lately written me that he feels perfectly well.

Of the sixteen other cases which it has been my privilege to treat, six had the operation performed on both limbs in immediate succession and ten on one limb only. Five were women and eleven were men. Whether the varicose condition was small or extensive the same operation was performed in each case, and each time anæsthesia was obtained with a 4 per cent. solution of cocaine. The progress of each case was remarkable and constant, *except one*, presenting an almost identical course with the first case related. At no time was there any elevation of temperature. Eight of these cases were operated upon before my class in the Medico-Chirurgical College of Philadelphia, six at the clinics of the Philadelphia Hospital and five in private practice. Of those operated upon in the Philadelphia Hospital the one exceptional case mentioned above deserves special description:

The patient was about 45 years of age, a blacksmith. Having performed the operation several times before the class, I proceeded to operate upon this patient without further remarks and, making the usual incision, I failed to find the saphenous vein. The varicose condition was entirely limited to the right leg. I sought a long while for the saphenous vein without success, and was compelled to abandon the treatment of this case by this method, having concluded that there must have been an anomaly in the course of this vessel.

Of the sixteen patients successfully treated, I am in the position of hearing now and then from but seven of them, and last week they were still satisfied with their condition.

If these results are maintained indefinitely, and there seems to me no pathological or anatomical reason why they should not, we think that this is a distinct advance over the other method of treating this painful condition—methods which do not deal with the whole condition at once but are applied more directly to such portions of the veins as are distinctly varicosed.

The advantages claimed for this method therefore are, first, it deals with the cases of varicose veins at wholesale; second, the operation if *aseptic*, is harmless, easy, and with the help of cocaine, painless; third, it achieves that principle which we know underlies the cure of all aneurismal or varicose conditions, viz: an ultimate obliteration of the impaired blood vessel. This is reached by coagulation of blood and gradual absorption of the coagulum, while sufficient white blood corpuscles have exuded during the period of distension to subsequently build fibrous tissue which will contract upon the obliterated vein; fourth, until now we are not aware of any relapse; fifth, a cure seems apparent in from two to three weeks.

DR. WYETH of New York—This seems to me an operation of considerable merit. But it has occurred to me that the writer neglected to call attention to the dangers of mistakes in diagnosis, as we well know this condition is often due to a compensation after obliteration of the femoral or popliteal. If in such a case we were to ligate the long saphenous, gangrene would be produced. I think it well to call attention to that point.

DR. LA PLACE—I thank Dr. Wyeth for his suggestion. Of course we wouldn't operate until we had decided the positive nature of the case. The surgeon is supposed to have previously studied the case and to have established the rationale of the treatment.

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**The Charitable Japanese.**—Out in Japan the doctor never thinks of asking poor patients for a fee. A proverb among the medical fraternity of Japan reads: "When the twin enemies poverty and disease invade a home he who takes aught from that home, even though it be given to him, is a robber."

# THE TREATMENT OF BLENNORRHŒA NEONATORUM.

Read before the Illinois State Medical Society, May, 1893.

BY BOERNE BETTMAN, M.D.

Professor of Ophthalmology in the Chicago Post-Graduate Medical School; Oculist and Aurist to the Michael Reese and German Hospitals; Attending Surgeon to the Illinois Charity Eye and Ear Infirmary; Professor of Ophthalmology and Otology in the College of Physicians and Surgeons, Chicago.

When we consider that from 20 to 40 per cent. of our blind must attribute their affliction to blennorrhœa neonatorum, we are forced to admit one of two things: Either the treatment is not understood or it is not intelligently carried out by a great number of physicians.

Our medical journals during the last decade teem with articles devoted to curative and prophylactic measures of this disease.

Every physician at this date has been sufficiently impressed with the importance of employing preventive treatment and of the gravity of blennorrhœa neonatorum.

Notwithstanding these long continued and oft repeated instructions as to the method of treatment, numerous children are still deprived of their vision. Many cases of blennorrhœa are lost.

I have lately seen, in consultation at my office, about a dozen babies where one or both corneæ were destroyed when brought to my notice.

An analysis of these and numerous other cases sent to me by physicians have convinced me that the majority of practitioners and a number of oculists are yet unacquainted with the therapeutic measures in force. Many of my colleagues had followed as they informed me, either in person or by letter, the instructions as laid down in various textbooks devoted to this subject.

The routine treatment where any was attempted was the following: Frequent cleansing of the eyes with a weak solution of boric acid, cold applications to the lids, local applications once daily to the under surface of the lids of a solution of nitrate of silver varying in strength from ½ to 2 per cent. Instillation of atropine as soon as ulceration of the cornea appeared and then consultation with the specialist before and after perforation of the cornea.

I have made it a special point to read critically the chapter devoted to blennorrhœa in a number of textbooks and essays, and will here record the views of a few.

Noyes (edition 1890 says) as soon as the secretion grows a little thicker and the swelling of the lids grow less, so that they can be everted, we are to resort to nitrate of silver in varying strength of from 1 to 2 per cent, (gr. v and x to ℥i).

This is not to be dropped between the lids because it will endanger the cornea. Later on he recommends the use of the mitigated stick by skillful hands, "in the later stages of the disease when papilliform swelling is extreme and the secretion is very thick."

In gonorrhœal ophthalmia he also advises the use of a 1 or 2 per cent. solution. He discountenances strong solutions in these words: "Formerly much stronger solutions were in vogue but they are not to be recommended, except in extreme cases, viz: 4 per cent."

Edward Meyer of Paris (edition 1887) recommends nitrate of silver 8 grs. to 1, but has preference for the mitigated stick; the same treatment holds good for gonorrhœal ophthalmia.

C. E. de Schweinitz 1892, also favors the use of a 1 or 2 per cent. solution. In severe cases the mitigated stick and even the solid pencil of nitrate of silver may be employed, great care being taken to neutralize the excess with a solution of common salt.

With reference to gonorrhœal ophthalmia, he is quite decided in his utterances: "At the proper stage nitrate of silver is the best remedy. It is rarely necessary to employ it in a strength greater than ten to fifteen grains to the ounce, but when granulations of the conjunctiva become exuberant the mitigated or solid stick at times alone will control the process."

Schweiger of Berlin, recommends local application of ½ per cent. solution of argentum nitricum at first, then later 2 and 3 per cent. He deprecates the use of the mitigated stick fearing the cicatrices it might produce.

Saemisch, Vol. 4, (Graefe and Saemisch Handbuch der Augenheilkunde), has written an exhaustive treatise on this subject. He also favors weak solutions of silver nitrate first and in aggravated cases the stick. He emphasizes the fact that the latter application be made to the retrotarsal fold only.

Fuch's instructions are rather meager; he mentions only the 2 per cent. solution of silver nitrate which is to be applied twice a day when the discharge is profuse.

Theobald Woods, (Reference Handbuch of the Medical Sciences) advocates a solution varying in strength from 2 to 4 per cent.

Schmidt-Rimpler's views almost coincide with those already given of the various writers here and abroad, regarding the strength of silver nitrate to be applied to the inner surface of the lids. The large majority are contented with a 2 per cent. solution and the mitigated stick in the extreme cases.

Solutions of this strength when used by competent hands will usually answer the purpose. The directions are not ordinarily explicit enough for the general practitioner. They suffice for a specialist who can take a great deal for granted.

Gentlemen, you will agree with me that a certain amount of skill is required to evert the lids and much more is requisite to bring the upper retrotarsal fold to view. Therein lies the solution of the problem. The remedy must be brought to bear on the cul de sac, that lax conjunctival tissue full of folds which is reflected from the upper lid margins on to the eyeball.

Two per cent. solutions applied to the tarsal part of the lids will not answer the purpose in most cases.

The practitioner makes the application to this part of the conjunctiva with the conviction that he has conformed to the rules laid down by writers. Soon the cornea becomes affected and the specialist is called in.

The use of the mitigated stick is a dangerous remedy to the inexperienced. If not carefully applied sloughs may result causing great loss of tissue and formation of cicatricial bands.

Again, it has been my experience that a 2 per cent. solution is often not nearly strong enough to control the purulent discharge. I have repeatedly treated neglected cases when nothing weaker than a 10 or 15 per cent. solution would answer the purpose.

The main object of this paper is to emphatically denounce the idea which prevails among the fraternity, that a 2 per cent. solution of silver is a specific for all cases of blennorrhœa neonatorum.

The erroneous impression is largely due to the meager instructions of the textbook writers, and to the fears which have been instilled into the minds of physicians through teachers, of the deleterious action on the cornea of a stronger solution than that of 2 per cent.

These precepts have fallen on fertile ground and have so imbued the mind with the dangers attending a strong solution of silver nitrate that even a weak one is used with trepidation.

The treatment of this disease does not only consist in using nitrate of silver, but in knowing when and how to use it.

To understand this more fully we must briefly consider the various stages and forms of blennorrhœa. Two great varieties are recognized: The mild type characterized by a slight muco-purulent discharge and little swelling of the conjunctiva; and the other more severe form showing profuse discharge of creamy pus associated with a severe swelling of the conjunctiva and lids.

Both have a first stage of conjunctival congestion and swelling with no purulent discharge, and a second stage which only then exists, when a purulent secretion is established beyond a doubt.

The milder form of the trouble is readily controlled by cold applications to the lids and in the second stage by the instillation of saturated solutions of boracic acid every two hours, and a daily application to the everted lids and cul de sac of a 1 or 2 per cent. solution of silver nitrate.

The more virulent form requires more energetic measures. During the first stage caustics *must never be employed*; they are absolutely injurious to the swollen glistening conjunctiva.

The physician must content himself with explicit directions to the nurse to cleanse the parts every hour or two with a solution of bichloride of mercury 1 to 5,000, and a saturated solution of boric acid. Cold cloths taken from a cake of ice must be placed on the eyes day and night and changed as soon as warm. A point of great importance is to warn the attendant not to injure the cornea with pipette or brush. If the cornea is denuded of epithelium the least degree, a means of entrance is opened to the germs which rapidly multiply and cause ulceration of the tissue. When the purulent secretion begins then, too, begins the active work of the physician. The child's head must be taken between the knees, covered with a towel, the lower lid everted and the cornea covered with the upper one.

It is wiser to begin with the application of a 2 per cent. solution of nitrate of silver. This must remain in contact with the conjunctiva until it changes to a milky, bluish appearance. The excess of fluid is then removed with a brush dipped in water. If the solution employed should be a stronger one, it will be well to neutralize it by washing the parts with a weak solution of salt water.

The upper lid is treated in the same manner, the cornea being protected by the drawn up lower lid.

Of paramount importance is the retrotarsal fold. The rolls of swollen conjunctiva in this seat of danger must be conscientiously cleansed and similarly treated.

If this strength of nitrate of silver solution does not decrease the amount of discharge a stronger 6 per cent. must be employed the next day, and so we must be guided as to the strength of the application by the quantity of secretion.

I have frequently employed in dangerous cases, in rapid succession an 8, 10 and 15 per cent. solution and feel convinced that the energetic employment of these powerful measures, and these alone saved the cornea.

If great chemosis exists at the corneo-scleral margin, no delay in scarifying these parts should be countenanced. Prompt, decisive action is essential in the various stages of this disease.

The use of caustics is not recommended oftener than once every twenty-four hours, because it requires that length of time for the tissue changes to be effected.

Vaseline has of late years been much employed as a valuable lubricant to the inflamed conjunctiva, and as facilitating the removal of the secretion from the folds of the mucous membrane.

As soon as the swelling visibly subsides and the discharge decreases I invariably employ hot fomentations; my object now being to hasten the elimination of broken down material and to favor a more rapid resolution. The hot applications are made two hours in the morning and two in the afternoon, the instillation of antiseptic measures being continued in the meantime. Ulcerations of the cornea require the additional use of atropine and in case they are of a progressive character, application of a 95 per cent. solution of carbolic acid to the surface of the ulcer or the actual cautery.

A paper of this nature would hardly be complete were not mention made of the well known preventive measures. I am often astonished at the indifference shown by the profession to these thoroughly tested and efficient means.

The statistics of the largest hospitals in the world have proved their use beyond a shadow of a doubt. I will not tire you by repeating this long list of tables but will content myself by assuring you that the percentage of infection of the eyes of newborn children has fallen in institutes, where these measures are systematically enforced, from 5 and 10 per cent. to a fraction of 1 per cent.

My friend Dr. Mitchell, kindly compiled the obstetrical cases which were found in the Cook county hospital during a period of five years from 1883 to October, 1888, 1,232 cases. Only two cases of blennorrhœa neonatorum are recorded. During most of the service Houseman's method only was employed and it was found sufficient.

Houseman's method which consists of vaginal douches of a 1 per cent. solution of carbolic acid or a weak solution of bichloride before labor is a simple way of rendering the genital organs aseptic.

Every prospective mother should be instructed as to this method by her accoucher. A double precaution is Crede's method. A single drop of a 2 per cent. solution of nitrate of silver is to be instilled into the eyes of every newborn child.

I feel confident that we specialists would be called to attend fewer cases of blennorrhœa neonatorum if these rules were universally enforced, and I am equally convinced that fewer cases of ulceration and loss of the cornea would ensue if the use of a stronger solution of argentum nitricum at times were advocated by teachers and writers.

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## MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues and subscription for THE JOURNAL. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, AUGUST 10, 1893.

## THE AMERICAN MEDICAL ASSOCIATION.

We publish in another column a very interesting and convincing argument from the *Medical News*, which shows the necessity that now exists for organization, and gives conclusive reasons why the AMERICAN MEDICAL ASSOCIATION should constitute the central rallying point. At the Milwaukee meeting the ASSOCIATION gained 273 new members, and there is no reason why the membership should not steadily grow throughout the year. The fact is self-evident that if the medical profession of this country wish to have power and influence in all matters in which they are interested they can only accomplish it by *organization*.

Membership in the ASSOCIATION can be secured at any time, and the door is wide enough for all qualified members of the profession to enter. The splitting up into myriads of small societies is to be deplored, as one of the surest means of disorganization The regular local, State and National societies surely afford a field broad enough for the full exercise of professional ability, however great, and the greatest men America has yet produced in the medical profession have been the founders and promoters of the AMERICAN MEDICAL ASSOCIATION. Let the active, restless spirits of to-day show what they can do in the arena made famous by the giants of the past.

## PHYSICIAN'S CERTIFICATE REQUIRED FOR SALE OF OPIUM.

In order to hedge about as much as possible the retail trade in opium there was in 1889 an order, or ordinance, passed by the Board of Supervisors of the city and county of San Francisco providing, among other things, in substance, that it should be unlawful for any apothecary or any person whatever to sell to any person in the city and county of San Francisco any opium, except upon written prescription or written order of a practicing physician, and only upon the day of the date of said prescription or order. It also provided that every person selling opium, etc., must keep a book and record therein the sale, the name, age, sex, color of the person receiving the same, the name and quantity thereof, as well as the name of the physician, and the name and residence of the patient, and that there should be attached to the bottle or parcel containing the article the name thereof, together with the name of the physician, the name of the druggist or other person who sold the article and his place of business. The prescription or order is required to be dated and signed by a physician, who must be a graduate in medicine with a diploma from a regularly constituted medical institution, and must contain the name and residence of the patient and the residence or office of the physician. Violation of any provision of the order was made a misdemeanor, punishable by fine, not exceeding five hundred dollars, or by imprisonment not exceeding six months, or by both such fine and imprisonment. This order or ordinance the Supreme Court of California has under date of July 15, 1893, just pronounced constitutional in the case of Hong Shen, notwithstanding that there was a State law which had for its object the regulation of the sale of poisons. The principle so settled is very important and should be given wider application.

## PRISON REFORM.

That there is need of prison reform in many States of our Union is evident from a glance at the statement of DR. P. D. SIMS of Chattanooga, published elsewhere in our columns. A mortality of 10 per centum is a frightful one, and it is especially lamentable as DR. SIMS points out, when the statistics show that under another system the mortality was only 15.1 per 1000.

The lease system, by which the convicts are leased or "farmed out" is responsible for this great outlet to convict life. One can not muster much sentiment for the woes of a hardened criminal, but the humanities, and a decent and proper self respect should induce all communities to take measures to insure proper hygiene in all prison establishments. This can only be done when such establishments are managed by the State. When managed by a lessee the system can only result in poor service, much needless suffering and wretchedness. The horrors depicted by Dickens, as witnessed in the cells of those condemned to solitary confinement are as nothing when compared with the condition of the poor wretches consigned to the unfeeling hands of the State contractor, who rewards or punishes, feeds or starves, according to his seared conscience, if he have any, or his cruel cupidity, if he have no conscience.

The commercial side of the question has too lo governed in such matters, and it is pleasant to that, when the medical profession speaks at all in the localities where these abuses prevail, its voice is uniformly given on the side of humanity.

## A CASE OF MORAL LYNCHING.

To judge from the cases reported in the daily press, an epidemic of lynching has recently affected certain sections of the country—material lynching in which the body of the accused and summarily condemned individual has been scourged, hanged, perforated with bullets or burned, as dictated by the inhuman whim of mobs whose brutal action make us shudder at the idea of sharing with them our common humanity. In view of the arraignment of Dr., or to give him his official title, Colonel Ainsworth, *for his alleged participation* in the manslaughter of the unfortunate victims of the Ford theater disaster, we are inclined to inquire if the epidemic aforesaid has not spread to the capital of the nation and if this arraignment is one of its manifestations.

In one at least of the material cases referred to, no sooner was the act accomplished than the discovery was made that lynch law had been too precipitate and a guiltless victim hurried to eternity. This suggests at least a halt for inquiry in the case of Dr. Ainsworth. Now that the thirst for a victim has been satiated by his indictment and arraignment, there is time to overlook his unpopularity with his clerks, to cease the newspaper cry for a sacrifice, and even to consider whether our legal formalities culminating in this arraignment were wholly uninfluenced by that popular clamor which was so insistent at the first inquest that its proceedings were annulled, nominally on the ground of lack of jurisdiction on the part of the presiding officer.

The facts as developed are as follow: No man has a better record as an executive officer than Dr. Ainsworth. Part of Dr. Ainsworth's force of clerks had to work in a building so badly lighted that gas had to be burned in some part of it every day. It was evident that electric lighting would remedy this, and Ainsworth, as any other progressive man would have done, made inquiry into the feasibility of introducing the needful plant. The proposition was referred to that bureau of the War Department which has charge of all supplies and improvements. This bureau, as is customary, advertised and more than a dozen men investigated the building with the view of undertaking the work, and every one of them offered to undertake it. Not one of these practical workmen suggested that there would be danger to the building. The contract, as is usual in such cases, was given to the lowest bidder; but not until Dr. Ainsworth had so far interfered with the routine methods of the contracting bureau as to make private inquiries into the standing and reputation of the particular contractor. Having learned that he had been for many years engaged in such work, and that he was held in good repute by contractors and builders intimately acquainted with him, the contract was approved and the work commenced. Ainsworth has been blamed for not furloughing his men while the alterations were in progress, but it must be remembered that none of the contractors who had investigated the building and bid on the work made any suggestion of danger in connection with it.

The accident happened and every one became very wise; but before its occurrence there was no thought of danger. Washington was horrorstruck when the ghastly news was passed from mouth to mouth; something had to be done, and the arraignment of the chief of the office, among others implicated in the responsibility, has been the result. Was it a case of moral lynching?

## HEALTH OF CHICAGO.

During the month of July 2,924 deaths occurred. The annual death rate per 1,000 was 21.64, and the number of deaths under five years was 1,775. Of these, cholera infantum caused 665, a greater number than by any other disease, while there were also 452 deaths by diseases of the abdominal cavity. The other chief causes of death were phthisis, 186; pneumonia, 79; diphtheria, 58; cancer, 56; typhoid fever, 55, and bronchitis, 55.

In the month of June 1,942 deaths occurred, and the annual death rate was 14.79, and the number of deaths under five years, 766. The chief causes of death were phthisis, 193; pneumonia, 141; bronchitis, 90; diphtheria, 71; typhoid fever, 60; cholera infantum, 56; cancer, 87; cerebral meningitis, 52.

In comparing the mortality of the months of June and July, it must be borne in mind that the death rate of June is always low; in fact, the health generally is better than any month of the year. Occasionally, however, when there is a marked increase of temperature the latter part of the month, the death rate increases and becomes higher than that of December. It will be observed that in June the highest mortality is among the diseases affecting the respiratory organs in adults, while in July, with a higher temperature there is a great increase of diseases affecting the alimentary canal, and infantile life.

For the week ending August 5 the total number of deaths was 646; under 5 years 394, and the annual death rate per 1,000, 21.32.

Compared with the month of July there is a marked decrease in the number of deaths, especially of those under five years. The mortality here is always the highest in July and August. For the last five weeks the health of the city has been good, taking into consideration all the factors that influence life, and at this time it is exceptionally good. There is also a less than usual tendency to diarrhœal disease, and a less marked prevalence than usual of the ordinary contagious and infectious diseases. The cause of the present health status is undoubtedly owing to the fine weather that we have had during the period under consideration. While it is true that for a short time the temperature was high, the average was lower than usual. There is no doubt that the effluvia of the Chicago river at one time had its effect upon life. The mortality from typhoid fever is still in excess. How long the present excellent condition of the health will last cannot be told.

### A CRAZY PHYSICIAN.

Dr. Robert Lincoln Watkins, of New York City, had himself inoculated with the tubercular bacillus, in the form of pure culture of the microörganism obtained from phthisical sputum. This was done at the Loomis Laboratory attached to the University of New York. Dr. Watkins also ingested a considerable quantity of the same culture. He has subjected himself to these experiments as an evidence that tuberculosis does not depend solely on the introduction of the bacillus tuberculosis into the human system. He believes that a healthy person, that is a person whose blood does not contain the so-called "third corpuscle," is absolutely immune to the bacillus. He has repeatedly examined his own blood and never having found the dangerous corpuscle, he has determined to put his theory to the test in his own person. Control experiments on one or more guinea-pigs were made with the same virus, in the belief that the animal or animals will, within six weeks, become manifestly tuberculosed, while he himself will be in unimpaired condition. If the accepted theories of the profession hold good in this case, twelve weeks from the time of the inoculation of Dr. Watkins will see him the victim of induced tuberculosis. But even this condition will give the experimenter little uneasiness, for his theory also comprises the curability of that disease when it is combated early. This is accomplished by the eradication of the "tubercular blood corpuscle," or hematoblast, from the blood.

This is not the first time that Dr. Watkins has fenced with death. In 1892, while in Paris, he was inoculated at the Pasteur Institute with a culture of the spirillum of cholera. He rapidly developed intense choleraic symptoms and for a brief time was seriously ill. This condition was overcome and on the following day the adventurous experimenter was as well as before.

Dr. Watkins is reported to be an exceptionally robust person, and if he remains well it may devolve on him to meet arguments to the effect that he is immune to the tubercular bacillus for other reasons than the absence of the so-called tubercular corpuscle from his blood. He has already been brought face to face with statements of some of his colleagues who claim to have repeatedly found the third corpuscle in the blood of persons who were not then or at any subsequent period the subjects of tuberculosis.

### PROFESSOR SENN'S ADDRESS.

We publish elsewhere Prof. Senn's address at the opening session of the Association of Military Surgeons of the National Guard. As will be seen, Dr. Senn has chosen a scientific rather than a general topic for his address. He has produced the most complete historical research yet compiled on the subject of intestinal suturing, and an examination of the accompanying illustrations will dispose of many an inchoate claim of priority. The engravings from the old masters brought out afresh by Prof. Senn exclusively in the Journal will, we are sure, interest every reader, and in reading the other portions of the address, the Association members will once more have a pleasant reminder that their own Journal is in the front as a gatherer of medical news.

## ASSOCIATION NEWS.

**The Disorganization of the American Medical Profession.**—"Did you attend the meeting of the American Medical Association at Milwaukee?" was asked of a physician a few days ago. "O, no! I do not train with that sort of a crowd," was the unexpected reply. This attitude of mind was hopeless, and the suggested Dundreary proverb concerning the kind of a bird that "flocks all alone by himself," was useless.

But this attitude of mind is one that two bodies have to look to a bit. The medical profession, as a whole, will sooner or later give it a sharp answer, and, whether this answer be spontaneous or compelled, another somewhat important body, called "the body politic," will have a very decisive word to say about it.

The disease is evident; it is a rebellion of the members against the whole body; it is an exaggeration of individualism, a democracy so rampant that factionalism has become easier than union. We are, it is true, in the full-tide of political democracy, but we have not yet reached socialism or anarchy. We still abide politically in representative government and (at least since 1861) in the rule of the majority. But in medicine we seem to think no organization necessary, and that professional individualism, factionalism, or anarchy is our natural state. There is even a touch of pride in flocking by oneself or with a half dozen like-minded self-flatterers.

Have we, then, no common duty, such a duty as can only be performed by the profession acting and speaking as a whole? If not, then of course there is no logical or valid answer to individualism. But to ask the question is to answer it with a ringing "Yes, we have such duties, and we are disloyal if we say we have not!"

But viewed simply as a professional matter, a little family affair with which, *pro tempore*, it may be admitted the lay world has no concern, what about this indifference to organization and this refusal of corporate duty? It is plainly a question of self vs. the medical profession; it is, frankly, nothing more than professional rebellion.

It is smiled over and talked about as an open secret that the formation of so many select and membership-limited societies of specialists has been motived by other reasons than dissatisfaction with the American Medical Association. It is said that they are not to be viewed as corporate protests against the "politics" and "the methods" of that, or indeed of any possible general organization, but that they are attempts to divide the consultation practice of the country among the limited number of fortunate members. This may be untrue. It is not for us to decide, but the action certainly permits the suspicion to arise, and the way to allay it is not to continue the contemptuous indifference to, and utter neglect of, some common organization.

It may also be noted that there is no evil more evident, no evil more universally deplored by rational medicine than the evil of medical sectarianism. But what bouffé logic, to complain of the homeopathic, eclectic or Kneipe crank and sectarian, while scorning general organization, and manufacturing factions and special limited societies, even within the regular profession. So long as the profession does not shake itself together and present to the public the spectacle of a united body of men agreed upon all the essentials of medical practice, just so long will that profession not command the respect of the world, and just so long will it be unable to accomplish its proper and destined work. To-day we are powerless to cause medical schools to be conducted for the sake of medicine instead of for the sake of the proprietors and professors; we are powerless to crush the hideous "patent" and proprietary medicine business; powerless to get "medical" newspapers conducted for medicine instead of for the advertiser; powerless to bring about the nationalization of health; powerless to prevent the needless and useless one-fourth of all deaths and the one-half or more of the sickness that is such an enormous tax on the commonwealth and crippler of all social energy. And why this powerlessness? Simply because of medical sectarianism, professional disorganization and anarchy.

There are numberless reasons that might be brought against the individualist and his neglect of professional organization. Sooner or later the common sense, or the sense that should be common, of the mass of physicians will recognize the fact that there is or must be such a thing as professional interests and duties, and that members of the profession must be held to an acknowledgment of them. Then will there be a quick ending of the factionalist and egotist. In every civilized country of Europe there is such organization and accountability. Even barbarous Russia regulates and stigmatizes the trade in patent medicine that free and civilized America sends to her in shiploads!

It was the witty saying of a wise man that democracy is only making pi, and certainly medical democracy is the absurdest of pi-making. Professional self-interest and the public interest stare at us from every aspect of life and work. There is no intelligence or corporate strength in this disunion. It is our duty to unite and to encourage *esprit de corps* by organization. Factionalism is an *esprit de corpse*, if the bad pun may be pardoned, and professional rebellion must be stigmatized, if not punished.

Considered simply as the largest medical organization in the United States, the American Medical Association offers the most suitable and the most probable gravitational center to which must gather the subordinate elements and groups. If not to your liking, it is not very liable to become more so by your non-membership. Parties, whether political or medical, are not mended by letting them alone. In every large organization thousands of minor differences and individual preferences must be sacrificed. The need of some organization is so great that longer to delay it is vanity and selfishness and whimsicality. There is slowly arising a general medical consciousness—unseen or scorned by the politician and anarchist—a spirit of centralization, a recognition of the duty of unity, nay, of the self-interest of unity. It will be well to reckon with this spirit, because its rule is as inevitable as its coming. There must be an end of this "flocking by oneself," this cliqueism, coterie forming, and limitless pi-making. This attitude of everlasting criticism by the disgruntled is silly and pig-headed. An aroused profession must sweep it aside, or else an aroused public sentiment will sweep an unworthy profession aside. There is even now a plain intimation of such a public condemnation of us in the fact that preventive medicine—the coming greater part of all medicine—is willy-nilly being taken out of the hands of physicians, and is being cultivated by the non-medical scientist. If this shall in fact and completely come about, it will be our own fault, a plain case of *felo de se*.

The American medical profession has one preëminent and imperative duty before it, to which all other interests and duties must be sacrificed, and that is the duty to organize. —*Medical News*, Aug. 5, 1893.

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**Query from the Omaha Clinic.**—Mr. Hart does not realize that the profession in America has the same view as in England concerning consultation with homeopaths.

He says: "How can we expect to enter into consultation with one whom we believe to be possibly practicing an honest delusion, and yet with whom we must accept the position of a mere solver of riddles?"

The agitation on this point has long since gone by. Here is the question for which the new code men strive: May a regular go with a homeopath to see a patient, or may the latter bring the patient to his office, if the patient is treated according to rational medicine?

It is fair to conclude that when a homeopath needs a regular he needs him badly or he would not call him, and, "as the good of the patient is the sole object in view," this is a strong argument on the part of the new code men.

In the nature of things it appears difficult to frame in words the meaning of this; certainly the Committee on Revision do not put it clearly. And until the new code men say just what they mean it might be as well to keep to the old code, or if they can't say what they mean, and this is best for medicine and the people, then let us have no written code for contention. We want to know next year, at San Francisco, intelligibly, just what we are voting on.

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**The Hahnemannic View.**—The American Medical Association is still at work upon the old subject, a Code of Ethics for a profession whose individual members are not considered gentlemanly enough by confrères to furnish their own code, but are required to be placed in the leading strings of an association to keep them within the bounds of decency and common honesty. The committee on the Code of Ethics, presented at the last meeting of the Association a majority and minority report, neither of which was acted upon. The majority report in spirit recommends the individual conscience as a sufficient code, while the minority have not the same confidence in their brethren and insist *that the code with its restrictions and fraternal advice* stand as it is. The *Medical Record* in speaking editorially upon the subject says what we most heartily endorse: "We doubt if any good will come from continuing to discuss these questions. We prefer to teach the gospel of virtupusness and let the details be determined by the individual conscience. The individual conscience, we may add, is setting strongly towards consulting with all qualified practitioners who enjoy a reputation for honesty among their fellowmen."

And to this conclusion we presume all sensible men will come at no distant day.—*N. Y. Medical Times* (Homœop.).

## SOCIETY NEWS.

**The Pan-American Medical Congress.**—The program of the Section on Pathology is as follows: Special attention of the profession is called to the practical demonstrations in Pathology, Photo-microscopy and Bacteriology.

One session devoted to a formal discussion on the subject of cancer to be opened by Dr. Wernicke of Buenos Ayres, and, as co-referee, Prof. Allen J. Smith of Galveston. Papers on this subject have been promised by Dr. Joshua M. Van Cott, Honorary President of the section, and Dr. Joseph McFarland of the Advisory Council.

Another session will be devoted to Yellow Fever, the discussion to be opened by Drs. Acosta and Grande of Havana, Cuba, and as co-referee, Dr. A. J. Amades of Puerto Rico, Honorary President.

One day, two sessions, will be devoted to Practical Demonstrations, as follows:

*Dr. James E. Reeves* of Chattanooga, of the Advisory Council: Practical Demonstration of the methods in Pathological Histology.

Dr. Wm. M. Gray of the Army Medical Museum: Practical Demonstration of the methods in Photography applied to Pathology.

Dr. J. J. Kinyoun, P. A. Surg. U. S. Marine Hospital service: Practical Demonstration of methods in Bacteriology.

Papers have been promised as follows:

1. Notes on Three Years' Work in the Pathological Laboratory of the Charity Hospital of New Orleans, by Dr. Henry Dickson Bruns of New Orleans.
2. Medical Geography of Puerto Pico, by Dr. A. J. Amades of Puerto Rico.
3. Theories of Inflammation, by Dr. Jose Torres Matos of Havana.
4. On Inflammation, by Dr. E. O. Shakespeare of Philadelphia.
5. On Cholera, Dr. Herman M. Briggs of New York.
6. L'etat de Hyperexcitabilite du Nerf Phrenique, dans le Beribiri, by Dr. J. B. de Lacerda of Rio de Janeiro.
7. Paludismo, by Dr. A. J. Amades of Puerto Rico.
8. Bacteriological Observations on the Waters of the Harbor of Havana, by Drs. Acosta and Grande.
9. Observations on Malaria, by Drs. Coronado and Madau.
10. Operations of the Anti-rabic Laboratory in Havana, by Dr. Acosta.
11. Abscess of the Liver, by Dr. James E. Reeves of Chattanooga.
12. On Influenza, by Dr. Ramon Guiteras of New York.
13. Observations on the Brains of Feeble Minded Children, by Dr. Henry W. Cattell.
14. Pathology of Pelvic Inflammatory Trouble, Dr. Joseph Price, Philadelphia.

Papers have been promised, without giving the subject, by Prof. Wm. H. Welch, of Baltimore; by Dr. W. J. Councilman of Boston; and by Dr. G. F. H. Nuttall of Baltimore, and Drs. Wm. Hughes and W. J. Carter of Philadelphia.

John Guiteras, M.D., Executive President, Philadelphia, Pa.; David Inglis, M.D., English-speaking Secretary, Detroit, Mich.; L. F. Criado, M.D., Spanish-speaking Secretary, Brooklyn.

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**Medical Society of Virginia.**—Preliminary announcement of the Twenty-fourth Annual Session, Charlottesville, Va., October 3-5, 1893.

The Twenty-fourth Annual Session will convene in Charlottesville, Va., 7:30 P. M., Tuesday, October 3rd, 1893.

Authors must send to the recording secretary titles of papers "at least five weeks before the session—failure in which will relegate any papers to the last day of the session." The secretary classifies titles according to subjects, and assigns the order of their presentation. Half an hour only is allowed for the reading of a paper, "and fifteen minutes for each discussion."

Subject for general discussion is "Chronic Nephritis"; leader, Dr. R. M. Slaughter, Theological Seminary, Va. Parties preparing papers on this, as also on other subjects, should inform the secretary of any notes they may wish made in the circular "Announcement," to be issued a month hence.

Competitors for Dr. Hunter McGuire's prize of $100 for essay on "Obstruction to the Function of Micturition," as also for Dr. Joseph Price's prize of $100 for "History of Surgery and of Surgeons of Virginia," must forward their essays to the recording secretary on or before September 20th, 1893. (For particulars, see pages 209 and 210, *Trans. Med. Soc., Va.*, 1892.)

Address matters referring to Medical Examining Board of Virginia to its President (Dr. Hugh M. Taylor) or its secretary (Dr. Benj. Harrison, Richmond, Va). Examinations will be held in Richmond, September 19, 20th, and 21st, 1893.

Send applications for Fellowship, with $2 initiation fee, to Dr. Wm. D. Turner, Fergusson's Wharf, Isle of Wight county, Va., Chairman Committee on Nominations of applicants for Fellowship, etc.

Address other communications according to their character to the president, Dr. Herbert M. Nash, Norfolk, Va.; recording secretary, Dr. Landon B. Edwards, Richmond, Va.; treasurer, Dr. Richard T. Styll, Hollins, Roanoke county, Va.; chairman Executive Committee, Dr. Hunter McGuire, Richmond, Va.: corresponding secretary, Dr. J. F. Winn, Richmond, Va.; chairman Committee Arrangements, Dr. E. M. Magruder, Charlottesville, Va.

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**Iowa Public Health Association.**—THIRD ANNUAL SESSION.—The local Committee of Arrangements desire to announce that the third annual meeting of the Iowa Public Health Association will be held in the city of Davenport, Iowa, August 31 and September 1, 1893, beginning at 10 o'clock A. M., August 31. Headquarters will be at the Business Men's Association rooms in the Masonic Temple.

The following persons will read papers upon subjects of interest pertaining to "Sanitary Science" in its various branches. Other subjects will also be presented for discussion:

Dr. Paschal Davis, Keokuk, Iowa; Rev. J. F. Kempner, M.D., Davenport, Iowa; Dr. Werland, Dubuque, Iowa; Prof. J. C. Shrader, President State Board of Health, Iowa City, Iowa; Dr. George L. Eyster, Rock Island, Ill.; Dr. W. H. Jones, Keokuk, Iowa; Dr. A. W. Morhead, Keokuk, Iowa; Dr. J. M. Watzek, Davenport, Iowa; Dr. C. H. Preston, Davenport, Iowa; Dr. Wm. O. Kulp, Davenport, Iowa; Dr. J. P. Crawford, Davenport, Iowa; Dr. Rosa Upson, Marshalltown, Iowa; Prof. E. L. Boem, Sr., Iowa City, Iowa; Dr. Chas. M. Robertson, Davenport, Iowa; Prof. E. G. Smith, Beloit, Wis.

Paschal Davis, M.D., is president and P. J. Fullerton, M.D., is secretary.

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**American Dermatological Association.**—Program of the Seventeenth Annual Meeting to be held at the Hotel Pfister, Milwaukee, Wis., September 5, 6 and 7, 1893.

Officers for 1893.—President, George Henry Fox, M.D. of New York; vice-president, Henry W. Stelwagon, M.D. of Philadelphia; secretary and treasurer, George T. Jackson, M.D. of New York; council, E. B. Bronson, M.D., G. H. Fox, M.D., G. T. Jackson, M.D., H. W. Stelwagon, M.D., J. C. White, M.D.

First day, Tuesday, September 5, 1893. Business Meeting (with closed doors) at 9:30 A. M.; Report of the Council; Nomination of Officers for the ensuing year; Appointment of Auditing Committee; Proposals for Active and Honorary Membership; Miscellaneous Business.

Morning session at 10:30 o'clock. President's address.

PAPERS.

1. Antiseptic Treatment of Skin Diseases. By Dr. C. W. Cutler.
2. The Principles of Antisepsis in the Treatment of Eczema. By Dr. H. G. Klotz.
3. Cosmetics. By Dr. R. B. Morison.

Adjournment at 1 P. M.

Evening session at 8 o'clock.

4. A Case of Tuberculosis of the Skin simulating Lupus erythematosus. By Dr. W. A. Hardaway.
5. A Case of Rhinoscleroma. By Dr. G. T. Jackson.
6. Atrophia Maculosa Cutis, with a Case. By Dr. W. T. Corlett.

Dr. H. R. Crocker of London, will read a paper on "Lupus erythematosus as an Imitator."

Second day, Wednesday, September 6, 1893. Business Meeting (with closed doors) at 9:30 A. M.; Reports of Treasurer and Auditing Committee; Election of Officers; Report of the Council upon Candidates for Membership; Election of Active and Honorary Members; Selection of time and place of next meeting; Miscellaneous Business.

Morning session at 10:30 o'clock. Report of Committee on Statistics.

General discussion on

1. Pityriasis Rosæ: *a*, its etiology; *b*, its relation to ringworm, seborrhœa, eczema, etc.; *c*, its treatment.
2. Dermatitis Exfoliativa: *a*, its clinical forms; *b*, its etiology; *c*, its treatment.
3. What do We Understand by Pemphigus?

Adjournment at 1 P.M.
Evening session at 8 o'clock.
7. A Contribution to the Pathology of Acne Varioliformis. By Dr. J. A. Fordyce.
8. Angiokeratoma. By Dr. J. Zeisler.
9. Subject to be announced. By Dr. M. B. Hartzell.

## The Association of Military Surgeons of the National Guard of the United States.

*Abstract of the Proceedings of the Third Annual Meeting, held in Chicago, Ill., August 8, 9 and 10, 1893.*

### First Day—Morning Session.

The Association met in the upper amphitheater of Rush Medical College, and was called to order by the President, Dr. Nicholas Senn of Chicago, at 10 A. M.

In the absence of the Rev. H. W. Thomas, Chaplain of the Illinois National Guards, prayer was offered by Bishop Samuel Fallows of Chicago.

President Senn then introduced the Hon. Carter H. Harrison, Mayor of the city of Chicago, who delivered one of his happy and characteristic addresses of welcome.

Dr. Truman W. Miller of Chicago, addressed the members on behalf of the local medical profession. He said, aside from presenting them with the active scientific work in our institutions, we had to show them in our glorious White City, conceived by the wizard's brain and built by the touch of the magician's wand, exhibits from all nations of the latest appliances, methods and preparations known or used for the advancement of medical and surgical science, and it was with great professional pride that he invited their attention to the exhibits made by the government through the officers of the Army, Navy and Marine Hospital Service, together with those of our universities, feeling that they would be convinced that we were rapidly progressing in scientific investigations. Medical men had always been expected to give a large part of their services for the relief of the human race without a full recognition of their value, but he believed that a well established association of military surgeons would command the respect and a position in military organizations which could be attained by no other means. In every State an effort should be made to advance the standard of its medical staff.

Dr. Albert H. Briggs of Buffalo, in the absence of Dr. Lewis W. Read of Norristown, Pa., responded for the Association and thanked the local committee for their warm greeting.

The report of the Committee of Arrangements was then made by the chairman, Dr. Charles Adams of Chicago. He announced a reception to be given by President Senn in the evening, and a theater party on Wednesday evening.

Maj. Nelson H. Henry, of New York, 1st Vice President, then took the chair and President Senn delivered his address. He selected for his subject, "Enterorrhaphy; its History, Technique, and Present Status."

The address was listened to with marked attention, and at its close a vote of thanks was extended to President Senn for his exhaustive and highly interesting résumé of the subject of the intestinal suture.

An executive meeting was announced for the morning of the second day at the United States Army Hospital at the World's Fair grounds. The Association will then discuss the practicability of changing its name to "The Association of Military Surgeons of the United States," and its scope will be enlarged to include the medical staff of the army, navy and marine hospital corps.

Arrangements will be made for an international congress, to be held in this country in 1894. Steps will also be taken to memorialize Congress concerning the establishment by the government of a military medical school.

The Association discussed the feasibility of establishing a military medical journal of the United States. A committee of three was appointed for this purpose to report at the executive session.

A cold collation was served at mid-day in the Presbyterian Hospital adjacent to Rush Medical College.

On motion the Association adjourned to meet at the U. S. Army Hospital at the World's Columbian Exposition, Wednesday afternoon at 2.

In the afternoon, Professor W. W. Keen of Philadelphia, (by invitation) gave a surgical clinic, which was largely attended by military surgeons and distinguished physicians from out of town.

In the evening a reception was given by Colonel Senn at his residence.

(*To be continued.*)

# BOOK NOTICES.

**Transactions of the Medical Society of the State of New York for the Year 1893.** 8vo, cloth, gilt top, pp. 540.

This handsome volume, one of the best of State Medical Society publications, sets forth in detail the proceedings of the annual meeting held in Albany February, 1893. The society adopted the following resolution in regard to the American Medical Association:

"*Resolved*, That the Medical Society of the State of New York deems it unwise at this time to appoint any committee of conference with the American Medical Association on the subject of Medical Ethics as requested by that distinguished body, but the Medical Society of the State of New York ventures to express the hope that the American Medical Association at no distant day will take such action as will remove the merely technical obstacle to the most cordial coöperation between the societies."

This resolution was signed by Drs. A. Vander Veer, D. B. St. John Roosa, A. Walter Suiter, Henry L. Elsner and George McNaughton.

The President, Dr. Lewis S. Pilcher, had spoken very frankly on the subject in his address as follows:

"I have the pleasure of presenting to this society at this time a communication from Dr. William B. Atkinson, Permanent Secretary of the
American Medical Associ [illegible] lution adopted by
that Association at its sess [illegible] 1892, appointing a
committee of five who are [illegible] ommittee from the
State Medical Society of New York, and the S [illegible]
of New York, for the purpose of adjusting all [illegible]
members of the State Medical Society of New [illegible]

could serve. The American Medical Association is very properly its own judge of what shall be the qualifications required of its members. It is
a voluntary association, responsible to n [illegible]
ard of admission at will. At its session [illegible]
that the Medical Society of the State of N [illegible]
[illegible] hat society essen-
[illegible] of Ethics of the
[illegible] -day differs in no
[illegible] or two later the Amer-
[illegible] claration which prac-
[illegible] as the code already
[illegible] w York. It did not,
[illegible] d in 1882, but on the
[illegible] d it and extended it
to embrace not only this societ [illegible] ut also all persons
who affiliated with it. At this [illegible] appointed a com-
mittee to report upon a revisi [illegible] f Ethics. There is,
therefore, no certainty as [illegible] of Ethics of the Amer-
ican Medical Association [illegible] ighly improper for the
Medical Society of the Sta [illegible] me in any way to dictate or even to suggest to any organization not subordinate to it what ethical standard, if any, such an organization should adopt. It must
[illegible] rds, as it now does, sug-
[illegible] organizations which have
[illegible] as to its internal affairs.
[illegible] y of the State of New York
[illegible] ame as those which it sus-
[illegible] anadian and Ontario Medical Associations, and to the medical societies of the various adjacent States to which it is in the habit of sending delegates annually, viz., the relations of courtesy and comity. All these medical organizations named continue to receive with due honor and respect the delegates appointed

> by this society, and doubtless, whenever the American Medical Association shall signify its desire that this society shall again send delegates to its meetings, such will be sent. The Medical Society of the State of New York, however, must meanwhile be content to do its own work in its own way, awaiting the pleasure of the Association in question. Nevertheless, since a failure by this society to appoint such a committee as is contemplated in the communication from the American Medical Association would doubtless be construed by many, who are still ignorant of the real relations which exist between the two organizations, as displaying a factious and quarrelsome spirit, and as a matter of simple professional courtesy I would advise that a committee of five be appointed by this society to meet the committee of the American Medical Association, as requested.
>
> "In the course of the discussions which have been provoked by the action of the American Medical Association just alluded to, it has come to the knowledge of your President that many of the physicians in this State are convinced that in view of the present state of general enlightenment prevailing throughout the State of New York, and the safeguards which by legal enactments are thrown about the entrance to the medical profession, it would comport more with the dignity of the medical profession, and would enhance the respect in which it is held by the general public, if all specific rules of ethical conduct were elided from the by-laws of the State Medical Society, and if the regulation of such matters were hereafter left to the judgment of individual practitioners influenced by the known consensus of professional opinion and local custom in the places where the work of each is being carried on. Among a large number of representative physicians from all parts of the State with whom I have conferred on this point I have found a singular unanimity of feeling on this subject. The only hesitancy which any have expressed has been as to whether it would be wise, since practically this is already the present status of the profession in this State, to make any movement looking to the formal elision of a code from our by-laws, lest it should revive acrimonious discussion and reawaken strife that would be detrimental to the higher interests of the profession in this State. By far the greater weight of the opinions which I have been able to elicit has, however, been that no such action would follow, but on the contrary that such action would tend still more to heal old differences and bring together all the elements of the medical profession in this State. Such is also my own mature opinion, and further it has seemed to me that at present, when there is a general revival of interest in the matter of professional ethics, as is evidenced by the discussions which are now going on in the medical journals of the country, and when the question of codes is again unavoidably brought to the attention of this society, that it is a specially favorable moment for taking this final step.'

The papers begin with a scholarly presidential address "On the Evolution of the American Surgeon," by Dr. Lewis S. Pilcher of Brooklyn. After a brief discussion of the history and general status of surgery as a sort of prologue to his theme, he begins with a sketch of McDowell, refers to Morton's invention of anæsthesia by inhalation, and closes by an enumeration of the lasting labors of Mott, Smith, Reid, Gunn, Bigelow, Buck, Davis, Sayre, Taylor, Shaffer, Otis, Marion Sims, Bull, Parkes, Senn, McBurney, Weir, Stimson, Fowler and O'Dwyer. It is perhaps not remarkable that extreme provincialism should omit all mention of Philadelphia, Charleston, Richmond, Louisville, Cincinnati, New Orleans and St. Louis surgeons from his list, but it is singular that Frank Hamilton, Willard Parker, J. R. Wood, E. M. Moore and Gouley should have been omitted. If any two men have made a mark in the surgery of New York, it was surely Frank Hastings Hamilton and Willard Parker. The classics have evidently been well studied by Dr. Pilcher, but his work on "American Surgery" is singularly inadequate.

The scientific papers in the volume, which are of exceptional value, have been mentioned in the current medical journals shortly after the time of the meeting and therefore need no further comment.

**The Bacterial Poisons.** By Dr. N. Gamaleia. Translated by E. P. Hurd, M.D. Paper, 16mo., pp. 136. Detroit: George S. Davis. 1893.

This book includes an experimental study of the putrid poisons, the microbial etiology of putrefaction and of the infections, the discovery of ptomaines, the chemical nature of the bacterial poisons, their origin, and action on animal organisms; besides a chapter each on the poisons of tetanus, diphtheria, cholera, tuberculosis, charbon and glanders. We commend the book, but it should have an index.

**Missouri State Medical Directory;** containing a carefully revised list of Physicians, Dentists and Druggists, together with the Colleges, Hospitals, Societies and Medical Journals of the State, arranged by counties for convenience of Society Secretaries. Pocket size, 120 pp., cloth, gold embossing. Published by *The Medical Fortnightly*, 1006 Olive street, St. Louis. Price $3, postpaid.

A handy directory for all Missourians, and those having business with them. Such books are always useful to the profession.

**Weekly Abstract of Sanitary Reports** issued by the Supervising Surgeon General M. H. S. Vol. vii, Nos. 1 to 53. Washington: Government Printing Office. 1893.

This volume of 870 pages is composed of the weekly numbers of the *Abstract of Sanitary Reports* published by the Marine Hospital Bureau, bound in convenient form and having a copious index.

## NECROLOGY.

**Dr. David R. Dyche.**—Dr. David R. Dyche of Evanston, died in that city Aug. 4th, 1893, from meningitis following a carbuncle of the face. The *Chicago Tribune* gives the following sketch of his life:

Dr. Dyche was of German descent and was born on a farm near Lebanon, Warren county, O., March 11, 1827. He graduated from the Cincinnati Medical College at the age of 25 and began the practice of medicine at Monroe, O., where he remained in practice for twelve years. Early in the sixties the doctor's brother, George Dyche, came to Chicago and opened a drug store. In 1864 he was ill and Dr. Dyche came here to attend to the sick man and subsequently located. The young physician associated himself with Dr. R. M. Bogue and continued for years with him in the practice of medicine. He also went into the drug business, having a store on the corner of Randolph and Dearborn and another on the corner of Madison and Halsted streets. The latter escaped the great fire but the former was burned. Immediately after the fire he began the erection of the block on the northwest corner of State and Randolph streets, where he located and remained in business up to the time of his death.

Dr. Dyche has always taken a prominent part in religious and philanthropic work. He was one of the founders and a member of the Board of Trustees of the Centenary Methodist Church. He removed to Evanston in 1874 and became a member of the First Methodist Church there, and has been a member of the Board of Trustees for several years. He has been a trustee of the Northwestern University for the last eighteen years and also a member of the Executive committee. He was also president of the Citizens League of Evanston, an organization for enforcing the prohibitory liquor law in that place. He was one of the founders of the Illinois College of Pharmacy, established in 1885, and was President of its Board of Trustees till it became a department of the Northwestern University in1888. Dr. Dyche was married at the age of 30 to Miss Mary S. Boyd, who with two sons, George B. Dyche and Ald. William Dyche of Evanston survive him.

**Dr. Pinneo.**—Dr. Timothy Stone Pinneo, author of Pinneo's Grammars and the reviser of the McGuffey Readers, died at Norwalk, Conn., Wednesday, in his 90th year. He was one of the oldest living alumni of Yale. He entered that college at the age of 16, and was graduated from the classical and medical departments with high honors. For a time he practiced medicine in the South, but failing health obliged him to abandon this field and to accept the professorship of belles lettres in Marietta College, Ohio. The last years of his life were spent at the head of a school in Greenwich.

**Dr. F. B. Huse.**—Dr. Fred B. Huse of San Francisco died Aug. 7, at Wesley hospital, Chicago. He was once a resident of Evanston and was in Chicago visiting the world's fair. An attack of typhoid fever proved fatal.

Dr. Huse was 50 years old and lived in Evanston until

1874. He was graduated from the Northwestern University in 1868 and spent a year or two in European travel. In 1871 he entered the Chicago Medical College and completed the course two years later.

**Dr. Henry Cropsey Cooper,** a son of Dr. Edward C. Cooper and a nephew of Peter Cooper, died last week at his home in Woodridge, N. J. He was born in 1829, was a graduate of the College of the City of New York and the College of Physicians and Surgeons, and served as a ship surgeon for several voyages on a sailing vessel between New York and Liverpool. He was a practicing physician in this city when the civil war broke out, and entered the Union army as captain in a company of the 7th New Jersey Volunteers. Dr. Cooper was wounded and was a prisoner for a time in Libby prison. After the war he became associated with his cousin Edward Cooper, and Abram S. Hewitt, in various iron works and mining enterprises. Dr. Cooper had a summer home in Woodridge, and at one time lived in Boiling Springs. His death was due to cancer of the stomach. He leaves a wife and one daughter.

**Dr. Thomas R. Dupuis,** surgeon to the City Hospital of Kingston, Ontario, died June 27, aged 60 years. He was vice-president of the Canadian Medical Association in 1886, and had been since 1871 one of the professors of the Royal College of Physicians and Surgeons, Kingston. He was a member of the Royal College of Surgeons, England. He was a facile writer both in verse and prose, and an eloquent and instructive lecturer.

**Dr. Henry Fisher,** a well known dentist of St. Louis, died Aug. 2.

**Dr. Perkins Bigelow,** died at Mansfield, Ohio, Aug. 4, 1893.

**Dr. J. D. Seawright** died at Frankfort, Mo., Aug. 7.

# DOMESTIC CORRESPONDENCE.

## An Admonition.

EVANSVILLE, IND., Aug. 2nd, 1893.

*To Whom It May Concern:*—Boast not, my brother, nor be too greatly elated over your erudition, skill and ability in matters medical, for the *facts thou knowest not*, are many times more numerous than the *facts* of which thou *art cognizant*, and the time is yet when men are greatest according to their ability to conceal their ignorance under the habiliments of learning.

J. B. WEEVER.

## Pass Him Around.

BENTON HARBOR, MICH., Aug. 5th, 1893.

*To the Editor:*—Dear Sir—It may be outside the province of THE JOURNAL to publish "dead beats," but, if you think it worth while I would like to warn the fraternity against one C. H. Warner, who claims to be a poor doctor from Florida going to relations in the North, but his wife being taken sick on the way, his money was used up, and he is unable to go on with his sick wife and three small children. This story seldom fails to secure enough from sympathetic physicians and dentists (whom he also works) to enable him to go on (probably) toward the "Fair."

He refers to Friendship Lodge K. of P. of Gainsville, Fla. for his standing as a gentleman, but there is no such lodge, and the Mt. Vernon Lodge, No. 20 of that city know of no such man. If this is of any use to you and you can save any of the fraternity from becoming swindled,

I am respectfully, WAKEMAN RYAN, M.D.

# MISCELLANY.

**The Railroads and the Board of Health.**—The following is the full text of the decision of the Michigan Circuit Court to which we referred in our last issue:

*Circuit Court of the United States, Western District of Michigan, Northern Division Minneapolis, St. Paul & Ste. Marie Railway Company vs. Samuel G. Milner et. al., Members of and constituting the State Board of Health of Michigan.*

On motion for a preliminary injunction before Judges Severens and Sage, the bill sets forth that the complainant, a corporation of the State of Michigan, is and has been for several years past engaged under a traffic arrangement with the Canadian Pacific Railway Company in the transportation of passengers on through tickets from Quebec westward through Canada, and over the line of the complainant's railway to and through the States of Michigan, Wisconsin, Minnesota and North Dakota, also eastward from those States through Canada to Quebec, a large portion of the passengers westward being persons traveling from Norway and Sweden to points in said States.

The defendants it is averred constitute the State Board of Health of Michigan acting under an Act passed by the legislatures of said State, and approved June 20, 1883, entitled an Act to provide for the prevention of the introduction and spread of cholera and other dangerous communicable diseases as amended by an Act approved April 25, 1893. The bill has attached to it as exhibits a copy of such of said acts and of certain rules adopted by said Board purported to be issued under and by virtue of the authority conferred by said Amendatory Act. It is further averred that said Board acting through its secretary and one of its inspectors, and in pursuance of said rules, is daily detaining and attempting to detain passengers on said Canadian Pacific Railway at the point opposite Sault Ste. Marie, Mich., and prohibiting their entering the State of Michigan until they have undergone the quarantine detention and until the disinfection of their baggage as prescribed in said rules. It is averred that this detention, examination and process of disinfection of baggage is applied to all emigrants irrespective of whether they came from an infected or healthy locality abroad and without regard to their point of destination. It is further averred that all said emigrants and travelers have been before said detention inspected by United States officials detailed for said purpose and that complainant has not received nor permitted to be conveyed within the State of Michigan any passenger, traveler or emigrant coming from any European port through the Dominion of [illegible] as have presented a certificate of [illegible] States Inspector. It is also averred that said Board is threatening to arrest officials and employes of complainant unless complainant shall submit to and comply with said requirements of said Board.

The claim is that the rules and action of said Board of Health are in direct violation of Section 8, Article 1, of the Constitution of the United States, in that they attempt to regulate and prohibit commerce with foreign nations; and that they are also in violation of the treaty made by and between the United States and Norway and Sweden, and now existing; also that they are over above, and beyond the powers conferred upon said Board by said Act and Amendatory Act of the Legislature of Michigan.

The bill then sets forth averments of irreparable damages and prays for an injunction.

The motion for a preliminary injunction will be overruled for the following reasons:

1. In Brown vs. Maryland, 12 Wheaton 419–433, Chief Justice Marshall recognized that the removal or destruction of infectious or unsound articles was undoubtedly an exercise of the police power of the State, and an exception to the prohibition resulting from the exclusive power of Congress to regulate the operations of foreign and interstate commerce, and he says that laws of the United States expressly sanction the health laws of the State. In the license cases 5 Howard, 504, 576, Chief Justice Taney declares that it must be remembered that disease, pestilence and pauperism are not subjects of commerce although sometimes among the attendant evils. They are not things to be regulated and trafficked in, but to be prevented as far as human foresight or human means can guard against them. In Ceatcher vs. Kentucky, 141 U. S. 47, Justice Bradley referrs to these cases with approval and states with great clearness and force the distinction between the exercise of its police

power by a State and an attempt to legislate upon matters of interstate or foreign commerce, which are exclusively within the power of the Federal government. These authorities render it unnecessary to refer particularly to the cases cited for the complainant. It is sufficient to say that they all relate to State enactments concerning articles of commerce and thence are not applicable here. Moreover, the Quarantine Act of Congress, approved February 15, 1893, expressly recognizes the validity of State laws, and in Section 3 requires the supervising surgeon general of the Marine Hospital Service to coöperate with and aid State and municipal Boards of Health in the execution and enforcement of their rules and regulations.

2. We find nothing in any existing treaty with Norway and Sweden which conflicts with the institution or enforcement by any one or more of the States of this Union of quarantine regulations.

3. We do not deem it necessary to express an opinion whether the provision of the Michigan statute making it a misdemeanor to violate the rules of the State Board of Health, adopted in pursuance of the Act, is constitutional or valid, for we should not, even if we were of opinion that it is unconstitutional undertake to issue an injunction against criminal prosecution by the State. That the legislature might authorize the Board to adopt rules is, we think, beyond question. Such rules are essential to the proper enforcement of the law.

4. To the objection that passengers from non-infected countries and localities are detained, the answer is that such detentions are in the nature of the case to a certain extent unavoidable, and passengers from such countries and localities may have become properly subject to detention by reason of having mingled with others who could communicate pestilence or disease to which they themselves had been exposed or subjected. An opportunity for separation is indispensable also.

5. The objection that passengers who had certificates from United States inspectors were detained is not tenable. The States may exercise their police power according to their own discretion and by means of their own officials and methods. The inconvenience resulting to emigrants and travelers from being halted and subjected to examination and detention at State lines is of trifling importance at a time when every effort is required and is being put forth to prevent the introduction and spread of pestilential and communicable diseases.

The costs and charges which are incurred in such quarantine inspection may lawfully be imposed on the railway company, as being incident to the business in which they are engaged. The costs of the motion will be taxed to the complainant.

H. F. Severens.
Geo. R. Sage.

July 29, 1893.

**Boston City Hospital.**—The city government has appropriated $400,000 for the improvement of the Boston City hospital. An interview in the *Boston Herald* with the president of the Board of Trustees states that:

"It is proposed, with the accession of this $400,000 appropriation from the city, to push forward pathological and surgical improvements with the utmost possible speed, and as soon as the East Chester park hospital for contagious diseases shall be finished, the two wards which are now used for diphtheria and scarlet fever can be used for medical cases, thereby giving increased accommodations for about sixty patients.

"During the year ending April 10, 1893, 460 patients were rejected, and during the preceding year 571 patients, or a total of 1,031 patients whose cases demanded admission to the hospital, and who would have been received were it not for the fact that the hospital was full at the time of their application.

"With our new appropriations," continued Mr. Shuman, "we shall complete the East Chester park hospital, and erect a new building especially for surgical operations.

"Our new surgical building will be constructed of non-absorbent material, the floors and tiles of marble, the wainscoting of marble, the walls of hard non-absorbent finish, and the furnishings and utensils of glass or iron, or other non-absorbent material.

"We shall prepare additional rooms for the purpose of sterilizing at a high temperature not only all the instruments, but all dressings, sheets, towels and the clothing worn by the surgeon and his assistants.

"We shall also provide additional facilities for baths and for disinfecting the operator and his assistants.

"We propose to construct laboratories for the analysis and study of surgical diseases, and several small rooms, so that different surgeons can operate in different rooms at the same time. At present we have only one operating room, and oftentimes several surgeons have to use this at the same time.

"We propose also to arrange rooms where patients can be etherized separately, recovery rooms for the proper classification of cases, also rooms where capital operations can be kept for a necessary time in perfect quietness, with more care and freedom from dust and poisonous germs; also consulting rooms for surgeons.

"We shall also erect a mortuary chapel, where religious services may be held according to the religious faiths of the patients who die at the hospital.

"We shall also erect a two-story building for the isolation of surgical cases in separate rooms. At present, the cases of surgical diseases which develop into delirium tremens are placed with ordinary surgical and medical cases.

"We have, moreover, no proper space in which to put the large number of alcoholic cases which, in spite of our rules, we are obliged by humanity to admit.

"I feel confident that when the plans of the trustees are carried out, the Boston City hospital will rank as high as any institution for the amelioration of suffering either in this country or in Europe.

"We have on our staff, Dr. D. W. Cheever, senior surgeon; Dr. H. W. Williams, oculist; Prof. W. T. Councilman, and others.

"The meditated improvements will be consummated with the utmost celerity and dispatch, but it will take the best part of a year before we can complete our present undertakings."

**Mortality of Tennessee Prisoners.**—Dr. P. D. Sims of the Tennessee State Board of Health, made the following statement in a paper read at the National Prison Association and reproduced in the Tennessee State Board of Health *Bulletin*, July 20, 1893. We are credibly informed that the condition of affairs in North Carolina is much the same as in Tennessee:

"I have been for a number of years a member of the Tennessee State Board of Health. Eight or ten years ago the chairman of our Prison Committee left the Board, and I was made chairman of that committee. I began to investigate the question. It had generally gone along as such matters do, with a careless supervision, but I thought it my duty to look into it, and give it a close investigation. The first thing I did was to investigate the prison reports to see what they were doing. My attention was at once attracted to the great mortality in the prison. We were sustaining a mortality of 77 per 1,000 per annum, while the mortality of some of our branch prisons ran up to 100 per 1,000 per annum. That struck me as being inordinately large, but as I was not conversant with the management of prisons I began writing to various prisons throughout the country for their reports, to ascertain what their mortality was. In this investigation I found the average mortality in all lease prisons to be 60.4 per 1,000, and that the mortality in non-lease prisons was 15.1 per 1,000, exactly one-fourth that of lease prisons. I made up my mind at once that whatever there might be of good in it, we could not afford to maintain the system that was killing four times as many as other systems. We have no right to take men's lives in our efforts to reform them or protect society. Society has a right to protect itself against the evil doer, but the best way to do that is to convert the man or woman from an evil doer into a doer of good; to convert a destructive member of society into a constructive member of society. All of that is lost sight of in the lease system."

**A Prophecy.**—"Will the coming man use both arms?" asks a scientist. He will if she will permit it.—*Detroit Free Press*

**Is now a Consulting Surgeon-in-Chief.**—Dr. George F. Shrady, the editor of the N. Y. *Medical Record*, has been appointed consulting surgeon-in-chief to the hospitals established by the New York City Board of Health.

**Will go to Corea.**—Dr. Charles H. Irvin of Mansfield, O., has been appointed surgeon to the Presbyterian Hospital in Seoul, Corea. The hospital is quite extensive, some 4,780 cases having been there last year. The building cost the Presbyterian Church $45,000. Two trained nurses (American) are in charge of the native nurses. The Corean government furnishes the apothecaries' equipment.

**Must Not Touch Sweat Shops.**—Hereafter the Health Department of Chicago will not interfere in the work of the sweatshop inspectors. Legal advice is to the effect that the department has only sanitary supervision and nothing to do with the employment of children.

**Yellow Fever.**—San Francisco, August 4.—Yellow fever is reported to be raging at Port Limon, on the Atlantic side of Costa Rica, and with such fatal effect that half the population have fallen victims to the dread disease. Among the dead are three physicians who had been sent to Port Limon by the government to assist in checking the ravages of the epidemic. Two deaths from yellow fever were officially announced at Pensacola, Fla., on the 10th.

**Must not Cut Horses' Tails.**—Largely through the instrumentality of the physicians of Massachusetts, a law has been adopted in that State prohibiting the practice of docking the tails of horses, "unless the same is proved to be done for the benefit of the animal." Whoever shall cause this cutting of the solid part of the tail, or shall assist in doing it, may be punished by imprisonment not to exceed one year, or by fine of not less than $250. The Society for the Prevention of Cruelty to Animals receives one-half of the fine when the agents of that society are the complainants.

**Cholera.**—The press dispatches state the progress of cholera as follows:

Rome, Aug. 4.—The *Tribuna* says that from Thursday noon to noon to-day twenty new cases of cholera and fourteen deaths were reported to the authorities in Naples.

Rome, Aug. 6.—It is officially announced that between noon Friday and noon to-day twenty new cases of cholera and thirteen deaths have been reported in Naples and three new cases and one death in Rome.

Bucharest, Aug. 6.—Cholera has broken out in the garrison at Soolina.

**Signed his own Death Certificate.**—Dr. George A. Fischer, a resident of Rochester for twelve years, took his own life by an overdose of chloral hydrate. He left behind him a certificate of death properly filled out, together with the following autobiographic sketch for the benefit of the press reporters:

"George A. Fischer, born at Hanover, January 27, 1848. Graduated from Hanover Lyceum. Volunteered 1866 in Hanover Horse Guards; made officer June 27. After the battle of Sangensalka served in the same capacity in 1856; Westfalven war 1870. Came to United States in 1873. Lost caste and came down to be an American doctor. Died according to certificate, to be found in desk.

"With kind regards, Yankees. Signed, G. Fischer, No. 31 Heaven, front parlor."

He was a graduate in medicine from one of the institutions of Baltimore. He was subject to periods of depression and despondency that were intensified rather than relieved by the self-administration of narcotics and intoxicants.

**Fast Days Postponed.**—A cable dispatch says: "The Pope has directed the Catholic inhabitants of Naples not to fast Fridays as long as the cholera prevails. He fears the physical weakness engendered by fasting might cause the people to be more susceptible to the disease. The meeting of the International Medical Congress in Rome has been postponed until April."

**The Ford's Theater Disaster.**—During the past week the legal process of investigating the responsibility for the disaster in the old Ford's Theater building, Washington, D. C., by which so many of the clerks of the Record and Pension Office of the War Department lost their lives or were more or less disabled, advanced another step in its progress by the arraignment of four men charged by the jury with having caused the loss of life. These were Colonel F. C. Ainsworth, Chief of the Office; W. K. Covert, Superintendent, and Francis Sasse, Engineer of the building, and G. W. Dant, the contractor who undertook the work of introducing the electric light plant during which the pillars supporting the floors became undermined and part of the three upper floors were thereby precipitated into the basement. The defendants pleaded not guilty to the indictment; but it was stipulated that they might withdraw this plea on or before September 15 and enter any other plea or motion they might see fit. It is understood that under this stipulation they will each hereafter demur to the indictment or move to quash it. The civil standing of Colonel Ainsworth does not appear to affect his position in the service of the government, for although arraigned for manslaughter, and under bail he continues to discharge the duties of his office and to look after the interests of his clerks and of the government just as if no accident had happened on June 9, last.

**Change of Address.**—Dr. H. E. W. Barnes to Creston, Ia.

## THE PUBLIC SERVICE.

**Army Changes.** Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 29, 1893, to August 4, 1893.

Capt. Walter D. McCaw, Asst. Surgeon, is relieved from duty at Camp Pilot Butte, Wyo., and ordered to the Presidio of San Francisco, Cal., for duty.

Capt. Richard W. Johnson, Asst. Surgeon, will report on or before August 6, 1893, to the commanding officer, Ft. McHenry, Md., for temporary duty at that post during the absence of Capt. Charles B. Ewing, Asst. Surgeon.

Major Alfred A. Woodhull, Surgeon U. S. A., is granted leave of absence for one month and fifteen days, on account of sickness, to take effect on or about August 15, 1893.

Capt. Edward C. Carter, Asst. Surgeon U. S. A., is granted leave of absence for two months, to take effect about August 10, 1893.

### LETTERS RECEIVED.

**(A)** Atkinson, W. B., Philadelphia; **(B)** Booth, Chas., Lowmoor, Va.; **(C)** Comegys, C. G., Cincinnati, Ohio; Chambers, J. H. & Co., St. Louis, Mo.; Cobb, J. O., Port Townsend, Wash.; **(D)** Drew, C., Jacksonville, Fla.; Dudley, E. H., Janesville, Wis.; **(G)** Guiteras, John, Philadelphia, Pa.; **(H)** Howe, Jas. Lewis, Louisville, Ky.; **(K)** King, Jas. K., Watkins, N. Y.; Kirkpatrick, A. B., Philadelphia; Kenyon, F., Scipio, N. Y.; **(L)** Laidley, L. H., St. Louis, Mo.; LaPlace, Ernest, Philadelphia, Pa.; **(M)** Minard, E. J. C., Brooklyn, N. Y.; McCurdy, R. L., Freeport, Pa.; Molley, E. J., New York, N. Y.; Murfree, J. B., Murfreesboro, Tenn.; **(R)** Reed, C. A. L., Cincinnati, O.; **(S)** Stahley, G. D., Gettysburg, Pa.; Stowell, C. H., Washington, D. C.; Shidler, G. W., York, Neb.; Smart, Chas., Washington; **(T)** Tracy, Edward A., Boston; **(V)** Vaughan, Geo. T., U. S. Marine Hosp. Serv., Chicago; **(W)** Wyckoff, R. M., Brooklyn, N. Y.; Warner & Co., W. R., Philadelphia, Pa.; Weaver, J. B., Evansville, Ind.

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## ORIGINAL ARTICLES.

### A FEW NOTES ON TARSAL AMPUTATIONS—TRAUMATIC AND ARTIFICIAL AMPUTATIONS—SUBSTITUTES OR PROTHETICAL APPLIANCES FOR LOST PARTS.

Read in the Section of Surgery and Anatomy, at the Forty fourth Annual Meeting of the American Medical Association.

BY THOMAS H. MANLEY, A.M., M.D.
VISITING SURGEON TO HARLEM HOSPITAL, NEW YORK.

The facilities, the appliances and the aids which the inventions of man and modern science have made available for operating surgeons, have so radically revolutionized the whole domain of surgery that it may now be affirmed, without fear of contradiction, that many of the dogmas promulgated and beyond cavil, as late even as the middle of this century in which we live, have become obsolete and antiquated. The almost lightning rate of American inventions has been a tremendous leveler of traditional doctrines of the near past. American invention has led the *whole world*, and in every place in which civilization exists, however remote, its impetus is felt. So that the unprejudiced of every clime and every race must concede to the land of Columbus the first and highest place among those nations which have made the world better, softened the hardships of the past, and spread broadcast those blessings which spring from a free, enlightened, liberty-loving and God fearing people.

Without the interposition of any miracles the lame and limbless have been made to walk; the blind, see; the toothless, masticate; the strangling, breathe; the crooked, distorted limbs have been made straight, etc.; but the crowning glory of all, is ours—of transporting the agonizing sufferer, during the torture of surgical procedure into the dreamland of repose and happiness.

Who that has traveled abroad but has observed that our surgical dressings, for profusion and quality, are unrivaled. Our modern operating theater, dietary, sanitary arrangements and nursing are difficult to excel.

But to the subject proper, and let us see at this, the great centennial of America's history, where we are on the question of the most appropriate treatment of those pathological and traumatic disorganizations of the foot, which involve an amputation in its continuity.

Of recent years, since the art of prothesis has reached such an advanced degree of perfection, it would seem from the startling assertions which we hear that, in the future, if we would treat those mangled or pathological conditions which extend into the tarsus with the best advantage to the patient, the entire foot should be sacrificed with the ankle joint included; in other words, that we must wholly disregard all former rules with reference to preserving all vitalized tissues, when such a lesion exists as heretofore called for a tarsal or medio-tarsal severance.

Let us first hear what a well known manufacturer of artificial limbs has to say on this subject. Mr. Charles Truax of Chicago, at the meeting of the American Association of Railway Surgeons held at Buffalo May 1, 1891, in presenting an essay on this subject said: "In amputations of the anterior part of the foot, it is just as certain, if you remove any of the bones necessary for the maintenance of the plantar arch or sever the plantar fascia, that you will destroy the usefulness of this arch, as it is true that the leaving out of a single stone from the span of an arch will permit it to fall; and whether you perform a Lisfranc's, Hay's, Forbes', Chopart's, the subastragaloid or an osteoplastic operation, you leave your patient a foot that is of *no value;* except to carry weight. In such cases the utility of the foot is either greatly impaired or wholly destroyed, and the portion allowed to remain becomes a useless appendage; worse than useless, as it is in the way of providing for something better. . . . . *Do not amputate between the metatarsal bones and the junction of the lower and middle thirds of the tibia. At all other parts save all you can; and you will, in every case, have done the best for your patients.*"

It may, perhaps, be regarded as a matter of questionable propriety to introduce the views of an artificial limb maker into a discussion on a surgical subject; but after a moment's consideration we can see that this is a fallacy, for it can be readily shown that it is only when the prothetician and the surgeon coöperate, the best interests of the mutilated patient are served. It is a well known fact that in the most of our populous cities to-day many dentists do nothing but extract teeth, while there are others who occupy themselves exclusively in fitting and repairing. Each excels in his own branch. As a rule, when the surgeon amputates a limb and the patient leaves the hospital he seldom sees any more of him, as he has finished his part and turns him over to the prothetician.

Now, generally, when he leaves the surgeon who has sacrificed the limb he feels that the latter is quite through with him, and turns to the artificial limb maker as his natural friend, to provide him a substitute for what is gone. To the latter he now goes also for *treatment* of his artificial limb as this, in time, shows the need of readjustment, removal or repair. Hence, while the surgeon has the man under his observation for weeks only, the latter seldom loses sight of him for his entire life. Accordingly, the opinions, judgment and experience of those who have given years to the craft of prothesis should not be unheeded; but be duly approved, appreciated, criticised or condemned as occasion requires.

It would seem little less than a barbarous mutilation in diseases of the teeth, when several sound members of the group survive, to wrench them out of their sockets and replace the entire arch by an artificial set; but experience and observation have alike convinced the surgeon-dentist and patient that, in order to secure the best æsthetic effect with the most comfortable and powerful set of grinders, that this sacrifice of healthy structures is often a necessity. Hence, in this instance, theory has to give way for practical demands, and a new art has demanded new conditions. Without doubt, to a certain extent, the same principle will apply to the adaptation of artificial substitutes, in those cases of disorganizations of structure which are limited to the joints of the foot and other parts of the body.

It may be prudent, before we enter on the question of which division of the parts shall be made in the foot, or partial foot amputation to, for a moment glance at the anatomical architecture of this organ, its physiological functions, and the almost total want of analogy between it and the hand.

Roughly speaking, the foot serves but two purposes: 1, as a support to the body; and 2, for carrying the body for locomotion.

In the standing attitude it may be said that the entire weight of the body is transmitted, through the tarso-tibial articulation to the surface of the heel. The plantar-arch, the anterior, tarsal, metatarsal and phalangeal structures while the body is in repose in the upright position serve no purpose except to, in a slight degree aid in the balancing of the body, preserving the equipoise; for it is only in locomotion, walking, running, jumping and similar movements, these are called into active exercise.

Those parts of the plantar surface which come in direct contact with the earth are thickly clothed with an investment which has immense elastic, resiliant properties. These consist of a cutaneous covering of great density and thickness, subcutaneous fibro-adipose tissue, the plantar fascia and cellular tissues. Now, it is absurd to talk of substituting any sort of a stump covering which can in any manner whatever, compare with this for its resisting power against pressure or friction. On this point[1] an author imparts a statement which, without doubt, will strike many as astonishing news. He says: "Before entering into discussion on the principles most important to be observed in the construction of a good stump, I desire to call attention to the erroneous impression regarding the wearing of an artificial limb that exists in the minds of many surgeons. This opinion is to the effect that in most cases following amputations in the lower extremity, the weight of the patient, or at least a great portion of it is borne on the stump. It is true that this follows some operations, but it is the exception and not the rule. When a section has been made through a bone no weight can be borne on the end of the stump. Disarticulation, or an osteoplastic operation alone will admit of pressure; . . . . . There are to-day thousands of patients wearing legs designed by Yankee inventors, where not even an ounce of weight is borne by the end of the stump."

This maker was perhaps a little extravagant when he said that there was not *an ounce* borne by the end of these stumps; but if he intended to convey the impression that they sustained no other weight than was necessary to secure an adjustment without wriggling or a swaying motion of it in the sheath of the artificial limb, he was entirely correct, as I am able to testify from my own experience, in not an inconsiderable number of cases.

How, then, in the face of such an allegation, which is well supported, one can by any species of philosophical reasoning advise the deliberate sacrifice of the ankle and the entire foot, when it is diseased or damaged, in any of its areas posterior to the metatarsus, is indeed inconvincible. This is retrogression, and brings us back to the time which antedates anæsthetics and aseptic surgery; when the operator, in order to operate with the greatest celerity and with the least infliction of anguish to his patient, as a common rule always severed the entire foot above the ankle joint for any condition of it rendering an amputation of a part of it necessary. On this subject Mr. Thomas Bryant, in his unrivaled textbook, speaks in no doubtful terms. He says: "In no part of the body has improvement in modern surgery shown to better advantage than in the foot; for in none has so much been done in the way of conservatism. Where formerly amputation of the whole foot was common, now we have Hey's, Chopart's, Sym's, Pirogoff's, the subastragaloid and Hancock's amputations; all founded on the well established position that governs, *or ought to govern*, in all amputations; viz.: that no more of the body ought to be removed than the necessities of the individual case require; or, in other words, upon the principle of the least sacrifice of the parts. To amputate a foot, when anything else will suffice, in the present age is regarded as almost criminal; and, surgeons generally accept Hancock's well-put question in his valuable lectures. . . . . "Can anything be more unphilosophical than to advocate the sacrifice of any bone, or part of the foot, for no other reason than that a particular operation should be performed? We should perform our operation as close to the damaged structures, and preserve as much of the foot as we possibly can with safety to our patient."—(*Bryant's Surgery*, p. 922, Ed. viii.

Ashurst says, "that Chopart's amputation was particularly studied by the late Mr. Hancock, who found that out of 152 cases but 11 died; a mortality of 7.2 per cent while no less than 120 out of the 126 who recovered had useful limbs. The results in subastragaloid amputations, says Ashurst, are more satisfactory. He cites Stephen Smith of New York, as saying that the Syms' stump is better adapted to an artificial limb than any other. Syms denounced Perigoff's amputation; but nevertheless, I have seen most admirable stumps after it, and entertain no doubt of its value. (Ashurst's Encyl. Vol. ii, p. 617). There is nothing in the latest American work, the "System of Surgery, by American Authors" on the controversial side of the question; nor is there a line in either of the two great French works, separately edited by Réclus, and by Péan, which have recently issued from the press.

Erichsen, when the foot is so crushed that one cannot with accuracy recognize the living from the dead parts, envelops the entire foot in a carbolic acid solution—1 to 20, and defers amputation until the exact limit of injury can be defined (Erichsen's Surg., Ed. viii, p. 140). Speaking of Sym's amputation, he says: 'That by it, the patient is spared an amputation of the leg; that it bears an exceedingly useful stump, which constitutes an excellent and useful basis of support. The results in Chopart's amputation, he says, are entirely favorable to the patient; as by the aid of a purposely constructed artificial apparatus he is able to walk, run, and even dance with little, if any, appearance of lameness. He admits that the heel is drawn up in some cases, but quotes from Verneuil, who alleges that this complication is almost never seen, except in cases of amputation for disease and that it existed before operation. He never saw it in a primary amputation. Mansell Moulin (*Syst. Surg.*, p. 1380) says: "That the stump left after a Perigoff amputation in many cases is exceedingly good; but that sometimes the stump will tilt forwards against the ground. This can be obviated by dividing the tendo-achillis and suturing the tendons in the periosteum."

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[1] Amputations in the Light of Prothetical Science. By Mr. Chas. Truax.

The late Dr. A. B. Watson, was not an advocate of Chopart's amputation. In his valuable work on "Amputations and the Principles on which Artificial Limbs should be Constructed and Worn," he there sets forth in his usual clear and energetic style the reasons why he took this position. He is the only author whom I could find, against the medio-tarsal amputation.

In the hand, our aim in amputation or treatment of a limited disorganization is to be guided mainly by two principles: first, to spare what we can, for prehensile purposes, and secondly, for its æsthetic effects. The foot not serving the same physiological function of the hand, and being always covered, the homely, awkward shape of the stump we care nothing about; as the strength and utility of the limb alone concern us.

But, since I have given this subject serious thought and careful study, the question has often occurred to me, "why do those medio-tarsal, or tarsal amputations at all?"

In an active traumatic surgery of more than ten years, and of a mixed pathological and traumatic surgery of the same time, I have never seen a single case which, to my mind was appropriate for a medio-tarsal amputation. I have never performed one. But, there is one principle which, in my practice, has been rigidly adhered to in traumatic disorganization of the upper and lower extremities alike—in any part of them, viz.: first, never to do an immediate primary amputation of any kind; and, secondly, to spare every particle of healthy bone, wherever situate, that we will have ample integument to cover.

The medio-tarsal or the tarso-metatarsal in the subastragaloid amputations all leave a very large stump surface, which necessitates a very extensive area of integumental flap to close in. At the tarso-metatarsal, and in the medio-tarsal junctions, we must have the entire plantar surface up to the webbing of the toes for a flap; else our amputation fails. Now my experience has been, that in those traumatisms in which so much of the plantar surface is intact that it preserves its vitality to the metatarso-phalangeal articulations, the metatarsal bones above though extensively fractured, as a rule may be preserved; hence, the body of the foot spared.

It is true, that in not a few cases of smashes of the foot we are sometimes obliged to make an extensive sacrifice of healthy bone-tissue, when a slough of the skin has over a large area laid bare the underlying parts.

Again, I may repeat that the fundamental principle on which my line of treatment, in all mangling lesions of the foot and other parts is based, has been to *spare everything* which will survive with comfort to the injured. This principle rests on the humane assumption that we have no right, in order to carry out a theory, to sacrifice a particle of living tissue. If for cosmetic or purposes of increased utility the patient, of his own will, desires a secondary operation after the primary lesion has healed, it may any time be performed. There are other cogent reasons which support this line of action. Among the most important comes the medico-legal aspect of the case.

In the event of a civil suit for damages after certain amputations on the foot the question might, with good reason, arise: would not the patient have had a much more comfortable and useful stump and stronger limb, if no artificial amputation of any kind had been performed?

My own experience in a large number of these cases would incline me to answer this question in the affirmative. For it is a custom with me, which is never deviated from, not to remove any tissues in mangling lesions of the foot, which have not been totally destroyed, by the "traumatic amputation." If, as the mortified parts are detached, the demarkating line is formed and the soft parts retract, parts of living bone project into the hiatus, they should be resected far enough back to permit the integument or cicatrix to fall in, easily over, and enclose them.

### A SHORT SYNOPSIS OF TWELVE CASES OF TRAUMATIC AMPUTATIONS ON THE FOOT, WITH ONE ARTIFICIAL AMPUTATION.

With two exceptions these cases all occurred within the past three years. Nine were hospital cases and three in private practice. All were males:

*Case 1.*—Patient 32 years old, middle size, in good health. An athlete and prize fighter. Crushed, as he was trying to mount the front platform of a street car.

Immediately after the accident he was taken up by an ambulance and brought to one of our principal hospitals. Here, when the foot was examined, he was informed that it must come off above the ankle joint. Took fright at this statement. Sent for a carriage and was brought to a hotel, to which I was called, about two hours after the accident.

On examination of foot it was found that the car wheel had passed obliquely over the outer aspect of the foot, crushing in and extensively shattering all the metatarsal bones, except those of the great toe, and laying widely open the soft, overlying parts.

The foot was thoroughly cleansed, all the bleeding points secured; but nothing cut away at this time. Limb placed in sterilized, copious dressings, bandaged lightly and placed in an elevated position.

There had not been much local pain, little temperature, or constitutional disturbance; the dressings were not disturbed, for four days. At this time everything was removed and parts exposed. All the toes dead except the great one. Great swelling in the toes; and tissues below the swelling black, bloated and bedewed by a free ichorous discharge. There was no foulness to the odor of the discharges. The body of the foot, on the dorsum and plantar surfaces seemed healthy.

Dressings now changed every day. The line of demarkation in a week well outlined. The necrotic tissues by the tenth day were becoming rapidly detached. On this date those parts which merely hung by tendons were cut away. In two weeks all the slough had come away, when it was found that the damage to the foot was limited to the metatarsal bones; all except the first destroyed to a point close to their articulations. The difficulty which now confronted us, was to fill in the breach occasioned by the loss of substance. A medio-tarsal amputation would not do here; hence, it must be an amputation above the ankle joint as had been suggested by the hospital surgeons. But the great toe served no useful purpose where it was; and accordingly I adopted that invaluable procedure of M. Guermonprez of Lille, of *disossment*, as he designates it; the toe was split along its inner aspect, over its entire length, the nail removed with its matrix, and all the phalanges and its metacarpal bone. Now this large vascular flap was turned into the hiatus, sutured and firmly bandaged. It filled the gap perfectly. Dressings removed in four days. Union entire. After this dressing there was little else to do. He made a rapid recovery; and now with the aid of an artificial apparatus he walks with scarcely a limp. This case and several others of a similar description were exhibited before the surgical section of the New York Academy of Medicine in the winter of 1892.

*Case 2.*—A young German editor, while dismounting from a train while in motion on a dark night, mistook his footing and had both feet crushed by the wheels. With one, the flange of the wheel cut it in two, crossing over it in a sharp diagonal direction, crushing everything through from the astragalo-scaphoid-articulation and the cuboid bones. This was cut through as sharply as with an ax; the tendons flattened out and torn, yet holding on to the mangled parts anteriorly. This was the left leg. With the right, the damage was not so extensive. Here, the wheel crossed obliquely, clipping away three of the toes and crushing through their metacarpus.

The wounds in this man's case were treated as the preceding. After eleven days the damaged structures were pretty well separated from the healthy. With the lesser injured limb the jutting ends of the uncovered metatarsal bones were cut away with the rougeuer, sufficiently far back to permit ample covering as the wound cicatrized. About one-third of the surface of the foot was lost on this side At this time on the left side we had a large, open, healthy granular surface of very large diameter, with nothing to cover it. The heel and ankle joint were perfectly healthy. This man was but 32 years old, in good general health.

Now the question arose as to what was to be done with his right foot, or what was remaining of it?

After a consultation it was decided that as the exposed surface was so large, *grafting would be impracticable*, and hence, that a Syme's amputation would be the operation which would provide the most useful stump for support and locomotion.

This operation was performed, but on the third day, as it was found that the flap sloughed, an amputation of the leg was performed at the junction of the lower with the middle third. From this he made a good recovery. Two months after, prothetic appliances were adjusted and he commenced to walk.

Now this was a typical case in which to test the comparative value of a partial foot amputation on one sine and its complete sacrifice on the other, at the point in the leg indicated. What has been the result? Simply that there is on comparison in the relative value of the limbs.

It was months before an artificial limb could be borne on the left side. The stump was sensitive, requiring soothing applications and special treatment, and rest at intervals for months; though it had a loose, simple integumental coming. This reminds me that the current teaching that an integumental covering makes the best stumps is a fallacy, for I have seen too many cases in which scar tissue when clothing the end of the bone gave the least annoyance and the most comfort. This gentleman with his right foot, which had suffered but a partial amputation, and was well fitted with an artificial contrivance had every comfort.

My only regrets are that I did not make a further effort to spare the other ankle joint, for I now feel that it is only after every other expedient is exhausted we are ever justified in sweeping away this powerful articulation.

*Case 3.*—Patient a young man of 20, in good health: three months previously in Savannah, Ga. had his right foot cut off through the anterior and middle thirds of the plantar arch by an accident in a saw-mill. An amputation of the entire limb was advised. He would not consent to it, and he came on to New York. In the first institution that he entered here, the same thing was recommended as in the South. But he refused again, when, as he had no means, he was advised to enter the almshouse, as he was a cripple. He went to an uncle in this city who brought him to the Harlem Hospital. On entrance he was hobbling about on crutches. The whole end of his foot was an open ulcer, very painful and freely discharging a sero-purulent material. The edges of the integument were turned in, but there was not enough tissue to cover in the now necrosed ends of the metatarsal bones.

Patient prepared for operation. Limb scrubbed, disinfected and swathed in sterilized gauze dressing. He was now etherized. All the diseased protruding portions of bone removed with gouge and rougeuer, until a healthy, hard, vascular surface was reached. Surface ring of the overlying, torpid integuments cut away. A flap of tissue on opposite thigh partially detached, foot brought up and fixed there by gypsum dressings, with the autoplastic graft imbedded in the gap. The whole of the graft did not take, but enough contracted adhesion to materially aid in closing in the opening.

Six weeks after this operation patient left the hospital with a useful and serviceable stump of a foot. As he had not walked on it for so long the sole was quite tender; but with the aid of a stick he got along very well. I saw him six months later, when he was working in a livery stable. Now walked well without crutch or cane. As yet, is not able to purchase artificial support. In this case, after final bone resection and union of the integuments nothing of the osseous parts remained in the foot except the tarsal bones. There was never any tendency to retraction of the heel.

*Case 4.*—This patient, a young man, 26 years old was injured by having his right foot removed by a trolly car wheel. Those electrical cars, because of their increased capacity and carrying part of their motor power within them, are very heavy.

All the toes of foot crushed into a pulp. The distal ends of all the metatarsal bones ground off. It was impossible to define the vital line at time of entrance; hence, we pursued our usual course in this case of traumatic amputation as we do in all others of any description, i.e., we effectually subdued all hemorrhage, dressed, adjusted the limb and waited. After ten days line of demarkation formed, when a large charred, dry plaque of dead integument was thrown off the plantar surface of the foot. Now protruding ends of metatarsal bones removed with the rougeuer; when the usual dressings were applied.

One month later breach entirely healed, and patient discharged. This man I saw recently. He walks with scarcely a limp and pursues his ordinary occupation of a cigar box maker.

*Case 5.*—This patient was a boy of 6 years of age, who had sustained an intracondyloid fracture of the left femur. The popliteal artery was destroyed; and before collateral circulation had become well established, all the toes of the foot below, and the soft parts as far back as the tarso-metatarsal articulations, gangrenous.

The sore became infected and the faculty physician advised an amputation above the knee joint; but he has steadily progressed towards recovery; the foot and leg have been preserved, and give promise of doing good service in the future.

*Case 6.*—These two cases may be considered together. Both were injured by horse railroad accidents. Each had sustained damage to one foot in about the same situation, viz.: at the tarso-metatarsal junction. In both, the same tentative course was pursued, with the result that each—one ten years after injury and one, one year, walks without lameness.

*Case 7.*—Two years ago a carpenter of middle age came under my care, who had his right foot smashed by a falling piece of lumber. A typical traumatic amputation had been effected through the posterior third of all the metatarsal bones; but, there was a singular escape of the sole of the foot, so that when the slough was thrown off and the ends of the bones resected it was utilized for a flap to close in, the parts. Since the wound healed, by the aid of an apparatus he has made his living at his trade; some stiffness in his gait but he has a useful supportable stump.

*Case 8.*—This case came under my observation during a bodily examination. It is incorporated here because it belongs to the family under consideration, though it was not treated by me.

Patient was a salesman three years before in Ireland; had his left foot crushed by a railroad accident. Sir Wm. Stokes of Dublin performed a Chopart amputation on the foot. The result was ideal. He walked without a limp; had a *smooth, soft comfortable stump; not the slightest retraction* of the heel, and wore no apparatus.

*Case 9.*—Patient a man of 64, diabetic; had incipient senile gangrene of toes of the left foot; in great pain. He had *been in hospital in New York, under surgical treatment*; but the persistence of the glycosuria stayed the hand of the operator. *Went home to Brooklyn, N. Y., at which place* shortly after leaving the hospital, I performed a medio-tarsal *amputation on diseased foot. Gangrene set in promptly after* operation, when I performed a second amputation at the junction of the lower and middle thirds of the leg. This wound healed promptly and an artificial limb was subsequently worn; when he returned to his trade of stonecutter. One year after had gangrene in opposite foot, from which he succumbed.

*Case 10.*—Patient, a young man, had his foot crushed in an elevator. The foot was tampered with by improper treatment until a general cellulitis and an osteomyelitis occupied a considerable part of it.

When called in to see the case an immediate amputation was advised, as gangrenous processes were rapidly extending into the ankle. A species of modified Chopart was performed, which had the desired effect in arresting pathological processes.

Wound healed kindly. By the aid of an apparatus he now walks without a limp, and congratulates himself that his whole foot was not amputated.

*Case 11.*—Patient a hostler; had his foot injured by being crushed under a horse's hoof. Developed suppurative osteomyelitis and sent to hospital. An amputation of the entire foot was recommended. He would not consent to this and was sent home. Here I saw him.

With him, all the toes had to be removed, three of the inner metatarsal bones, and about one-half of the shafts of the two outer.

Plenty of healthy soft parts to cover in the openings. Parts readily healed. The result has been entirely satisfactory. He never could afford an artificial apparatus, and thus far, now nearly two years, has managed to follow his usual occupation without any serious drawback. He is but slightly lame, and being obliged to stand a considerable part of his time, the resulting stump is severely tested.

*Case 12.*—This I record as one of Chopart's amputations which went badly. The patient, a hearty middle-aged man had his left foot crushed by being struck by a missile of flying rock from a blast. The attending surgeon performed a medio-tarsal amputation. The wound healed by first intention in about three weeks.

He came to me six months after the original amputation, telling me that his limb was useless, as it could bear no weight whatever. After consultation I amputated what remained of the foot and the leg in its lower third. He now wears an artificial limb with comfort.

*Case 13.*—This patient was not operated on by me. But his case is of interest as showing what can be accomplished with a Chopart amputation with a properly adjusted apparatus. He was 24 years old. Two years before had a Chopart amputation performed for an injury to the foot. He came to me for treatment of a varicocele, when I discovered that he had an artificial apparatus on his leg, and he showed me the stump after completion. He informed me that unless he informed people they never would suspect anything wrong with the limb at all. He said he went to several balls during the past winter and went through all the dances without the slightest trouble.

He was a drummer for a jeweler's house and almost constantly on his feet. Without the artificial elastic adjustment which he wore, he said walking was very painful and difficult.

To my mind one good reason for making amputations low down near the ankle joint in healthy young subjects is, that should a tender, sensitive or painful stump result we can go up with a second amputation, and yet have an ample length of the leg kept for the comfortable adjustment of an artificial limb. When the amputation is at the junction of the lower and middle thirds, a second amputation is much more dangerous to life, and will leave so short a stump, it may interfere with effective prothesis. How many of those mid-tibial amputations do we see in which the stump can tolerate no pressure of any kind, and locomotion is possible only by bending the knee and strapping a sort of crutch-shaped apparatus to it.

It may be affirmed then with every argument that sound logic can advance, that in lesions, traumatic or pathological of the foot, the principle should be enforced of sparing any portion which will preserve its vitality. Should it be discovered later that, as an aid to prothesis, another section will render locomotion more effective and comfortable it may be made, but not without an understanding with the patient that this latter expedient may not improve his condition.

Dr. Quimby of New Jersey—In 1877 I read a paper before this Association describing an operation which is a modification of Pirogoff's and superior in that I do not disturb the cartilages on the extremities of the tibia and fibula. A great many injuries to the foot are followed, very wrongly by amputation. In this operation I make a curvilinear incision over the anterior portion of the foot, disarticulate the astragalus from the os calcis, saw off the anterior portion of the os calcis, and turn the sawed surface directly up against the cartilaginous surface of the tibia. In many cases I get union by first intention. The whole weight of the body can subsequently be borne upon the stump without the patient flinching. There are now in Jersey City two cases still walking about upon whom I operated in 1877, and to see them you would not know that there was anything the matter with the foot, although of course there is no spring to the step. This method has an excellent advantage in the case of a child or youth in that the growth of the bone goes on, as is not the case after a Syme's or a Pirogoff's operation. It is such a simple operation that any surgeon can do it, and it will result in great benefit to the patient. We should not think so much of the beauty of an operation, but of the results. We want conservatism in surgery, and this is one of them.

Dr. Maclean of Michigan—There is some force in Dr. Quimby's assertion as regards the danger of causing a shortening and a defect in the symmetry of the limb. It is a misfortune if we have to remove the epiphyses in the case of a child, but my experience is that if Syme's operation be properly done there is not much arrest in the growth of the limb; we remove only the cartilage not the epiphysis. I give Dr. Quimby full credit, but so far as I know his operation has had only a very limited trial and I am afraid that in some of those cases there is danger of an inflammatory process taking place in the articulation. Syme's operation has been long before the public and has been thoroughly tested. I have done a large number of them and my experience is that I would be very slow to abandon it for any method yet suggested. When accident necessitates an operation it is the surgeon's duty to do the best he can and he may not be able to do Syme's operation, but when a choice is left it is my experience and that of the profession all over the world that the argument is overwhelmingly in favor of the Syme's. In tubercular disease it is immeasurably ahead of all because it leaves behind nothing to endanger a recurrence of the disease. In conclusion I will say that I have thought the Syme's operation the proper one for the ankle, but if it is to be above the ankle it is better to go near the knee where you will have a choice of two methods of after treatment—that is with an artificial limb or the knee can be bent and not have a long projection behind.

Dr. Somers of Wisconsin—I agree with Dr. Quimby in all he says; a mucous and a cut surface will unite; it will be found infinitely better than will two cut surfaces.

Dr. Link of Indiana—Another element should enter into the consideration of this subject as well as conservatism; a life is always worth more than a limb. I have had some experience in traumatic surgery, both during the war and afterward in the railroad service, having performed in all over 400 amputations. During the war we abandoned operations about the foot. I remember at Murfreesboro an operation by a regimental surgeon upon the foot of an officer. Healing took place nicely but afterwards, when he went into field service, in riding horseback, irritation of the stump was occasioned by pushing the foot into the stirrup to such an extent that the sufferer was compelled to leave the field, return to the hospital, have an amputation made higher up and obtain an artificial limb.

Dr. Rodman of Kentucky—I have always insisted that all of these operations on the foot, Sir Francis, Syme's or Pirogoff's—have their distinct field. Some of my associates insist upon amputation above the ankle; I admit that each of them should be done according to the indications. I believe there are good results from all of them, but it must be remembered that in Chopart's particularly we are liable to get an ulcerated and an elevated heel. I had never heard of Quimby's operation and am exceedingly impressed by it, and we would certainly get a lengthening of the limb. It will evidently be of value in selected cases. I admit that it is unnecessary in Syme's operation to approach the epiphyseal line, but this line can easily be overreached in young children. Of course there is no excuse in an operator so doing but such a thing will and does happen.

**Dr. Newton** of New Jersey—One case of my own was sufficient to demonstrate to me the advantage of extreme conservatism. A boy about eighteen years of age had both feet frozen. About two weeks afterward I performed a double Hays' operation and kept the patient in bed three months. That was about a year ago and when I last heard from him he was doing well and earning his living at manual labor.

**Dr. Coolidge** of Chicago—One important element that should be recognized in the consideration of this subject is that of the expense of procuring an artificial limb and keeping it in order. For a poor man this is quite an undertaking.

**Dr. Ferguson** of Winnipeg—I wish to mention the indications for operations on the foot and below the knee when necessitated by frostbite.

We have a good many cases of freezing, up in our country and amputation is frequently necessary. I have had considerable experience in that line in the past ten years and I always save all I can in front. Hay's and Lisfranc's operations have proven very satisfactory to me, and when I cannot do these I usually do Syme's and have had no occasion to regret it. Dr. Quimby's operation impresses me favorably; it should take a place in surgery, especially in cases of frozen feet and I shall try it.

**Dr. Manley**—My paper was presented chiefly for the purpose of bringing out discussion on the subject. My experience has convinced me that to sacrifice the ankle joint is a very serious matter, and that it is very seldom necessary in traumatic cases. I am not familiar with Dr. Quimby's operation I must confess, not having seen it in the literature of the subject. In reference to the point of preserving the patient's life, I would say that in traumatized conditions of the foot a primary operation should not be made, but we should wait for the line of demarkation to appear.

There is no similarity between surgery in war and in civil life, and what we would do in the one should not be taken as a criterion for proceeding in the other.

The matter of the expense of an artificial limb is a very important point, but no more than one in ten cases ever wear an artificial limb.

# ANALYSIS OF ONE HUNDRED AND THIRTY-THREE CASES OF HERNIA OPERATED UPON FOR THE PURPOSE OF RADICAL CURE.

Read before the Section on Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

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It may be possible that I owe the Surgical Section of the American Medical Association an apology for inviting their attention again, at so short an interval, to the subject of hernia. However, it is not for the purpose of repeating my views which I have so recently presented in extenso to the profession, but the rather that I may analyze a little more carefully the results of my personal experience, and also that of the distinguished surgeons who have made valuable contributions upon this subject since, and briefly draw therefrom the deductions thus afforded. In my work[1] published last summer, I gave a brief review of 112 operations with the history of seventy-eight cases which I had been able to keep under observation. Of these, there were reported four relapses, and of the four, three had returned within six months from the time of operation. I have reoperated upon two of these with a perfect result. Since this published report I have operated for hernia in twenty-one cases; thirteen were right inguinal, five left inguinal, two femoral, and one omental. In two cases there was a limited breaking down of the wound. Number 133 was evidently owing to infection, and is worthy of brief comment:

Mr. F., aged 23; a strong, vigorous man, but had suffered for years from an irreducible scrotal hernia, made much more painful from the attempt to wear a truss. Section revealed that it was of the congenital variety, and the omentum was firmly adherent to the testicle nearly its entire length. Separation proved impossible without injury to the testicle, and the omentum was sutured across and divided. The operation was conducted in the usual manner, a new tunica vaginalis testis being formed. I dissected the sac to its base, sutured across and resected; closed the parts as usual. Skin wound healed primarily, but ten days after operation there was a slight suppuration at the upper portion of the wound. The testicle was not painful, no œdema of the scrotum, and the patient was almost entirely free from suffering. Otherwise, the recovery went on satisfactorily.

Number 122 is interesting in that the hernia was of long standing, and breaking down of the tissue followed from the greatly thinned and devitalized condition of the abdominal wall. It was of the irreducible scrotal variety, about the size of an infant's head, incapacitating the patient from active labor. The omentum was everywhere adherent to the sac, and the sac to the surrounding tissue. Little over one pound in weight of deformed omentum was removed. The sac was painstakingly dissected out and the injured, shreddy tissue was cut away. I closed the wound in three layers with the buried tendon suture, sealed with iodoform collodion as is my habit. The patient made seemingly a rapid recovery until quite two weeks later, when the superficial tissues softened in the upper portion of the wound with slight discharge of shreddy material. This was evidently owing to the defective vitality of the parts and not to infection. Rapid convalescence supervened and nearly six months later the report is that the parts are firm and strong.

Number 130 is also worthy of brief detail: A moderate-sized right scrotal hernia has long given suffering, being imperfectly retained by a truss. An undescended testicle is easily outlined on the left side at site of the internal ring. Otherwise the patient is a healthy man, aged 42, married with a family. I made a new tunica vaginalis testis in the scrotal tissue, having freed it from its attachment at its former site and pulled down the cord. The transplanted testicle was stitched to the base of the scrotum with a tendon suture, passing through the connective tissue of the cord just above the testicle. Sutured the newly formed canal closely upon the cord and closed the hernial opening which was direct, admitting the tips of two fingers, from below upward. The reconstructed canal was of normal length, and the wound was sealed with iodoform collodion. Primary union supervened in both wounds except a slight opening at the base of the scrotal wound of the left side, from which in about two weeks a little broken down connective tissue was removed. Testicle gives no suffering in its new situation and the result is very satisfactory. The history of the other cases contained nothing noteworthy.

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[1] The Anatomy and Surgical Treatment of Hernia. D. Appleton & Co.

During the year I have re-operated upon two cases which belong to the series reported last year as cured. As far as now known, there have been six recurrent herniæ in the 133 operations and no deaths. No truss has been advised with perhaps a single exception, where the abdominal wall was greatly thinned with slight bulging of the side, but without recurrence of the hernia. A considerable portion, quite one-third of the number have been under observation for ten years or more.

The recent literature of surgery has been exceptionally replete with reports of very many cases, almost without mortality. Perhaps the most noteworthy of the European contributions upon hernia is that of Professor Kocher of Berne.[2] In his first forty-two cases, covering the period from 1875 to 1886, the result showed a permanent cure in 83.4 per cent. with a recurrence of 16.6 per cent. Of the relapses the inference was that in four out of five of the cases, the hernial ring had not been securely closed. In his more recent report he was able to trace the history of ninety-four patients from the 119 operated upon.

His method of operation briefly described is as follows: Isolation of the sac to its very base with as little damage to the external structures as possible. The cord is not displaced from the canal. The index finger of the left hand is introduced into the canal and a small opening is made laterally from the posterior inguinal ring through the aponeurosis of the external oblique muscle. A pair of slender artery-forceps is passed through this opening and out through the external inguinal ring. The hernial sac is grasped and drawn upward through this opening and energetically twisted. It is then carried down upon the anterior wall of the unopened inguinal canal and held thus twisted by the forceps. "The sutures are passed above the twisted sac, through the oblique fibers of the aponeurosis of the external oblique muscle and the underlying muscular fibers of the external oblique and transversalis through the hernial sac itself, including the ligament of Poupart beneath it. These sutures, five to seven or more, bring together also the pillars of the anterior ring, to which the lower end of the hernial sac is fastened." The modification of procedure peculiar to the author is yet another way of utilizing the peritoneal sac, not very unlike that of Dr. Bryant of New York, which he finds may be recommended in a limited number of cases.

Kocher assumes that it is safe to conclude that four-fifths of all patients operated upon may be radically cured, that the use of the truss after operation should be exceptional, that not the slightest excavation in the peritoneum about the internal ring should be permitted to remain. He writes: "We know positively enough from our statistics, how a method which in itself is technically perfect, in case of infection amounts to positively nothing." . . . "In this manner a firm and solid pad or roll is secured over the entire length of the inguinal canal, which forms a better dam against the pressure of the intestines than an implanted patch of skin or peritoneum." He uses interrupted buried silk sutures. He emphasizes as of the first importance, the complete obliteration of the infundibulum depression of the peritoneum by the closure of the neck of the sac. It will, however, be seen that he makes no effort to reinforce the tissues posterior to the cord, or to close the deepened border of the internal ring, and thereby restore the obliquity of the canal.

Dr. G. R. Fowler of Brooklyn,[3] reviews carefully the subject of operative measures for the cure of hernia and gives the results in thirty-three operations, in which he has used a method of closing the wound of his own devising, "cross suturing" with silkworm gut.

He disposes of the sac by a free dissection quite to within the internal ring, and prefers to close it as the "ideal method" by a line of through and through sutures, in cobble-stitch fashion and resects it. The sac is held tense by an assistant and no portion of it is to be permitted to occupy the internal ring. Dr. Fowler strongly advises the method of Bassini, modified by Postempski in the disposition of the cord. This is to displace the cord towards the median line after having completely freed it from the canal, and attaching it by loose loops of catgut to the abdominal wall beneath the skin.

Dr. Fowler prefers to make a new internal ring by the dissection of the aponeurosis of the external oblique, for a distance towards the median line sufficient to permit the placing of the spermatic cord in this its new location, as far as its length will allow. In this he follows Dr. Halsted of Baltimore. The sutures are about three-eighths of an inch apart and a sufficient number are employed to close completely the wound, no drainage being used. The sutures are left in for at least three weeks. The advantages claimed for this method are forcibly put by the author as follows: "Under all circumstances in which a recurrence is favored or produced, the direction of the force is from within forwards and downwards. When the cord is made to assume a course upwards and then inwards before making its descent in the direction of the scrotum, nothing short of the patient standing on his head will favor the entrance of a portion of intestine alongside of the cord and permit it to follow its course. It may be said that the weight of the testicle will tend to straighten the cord finally; this is true to a certain extent, but the manner of placing the sutures here described will prevent this for the reason that the cord is held away from the line of incision by being placed entirely outside of these, independently of the chromocized catgut loops which fasten the cord in its new position; second, the cross-suture secures in the approximation of the edges of the divided layers separately all the advantages of the buried catgut sutures; being removable at will, it presents none of the disadvantages arising from the uncertainty as to the length of time which the latter may be depended upon to hold securely."

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[2] Annals of Surgery, Dec., 1892, p. 505.

[3] Annals of Surgery, May, 1893, p. 16-27.

Dr. Fowler never permits a patient to sit up even in bed for the first six weeks following the operation, believing profit is often obtained by prolonging the stay in bed a fortnight longer. He considers an operation for the radical cure of hernia which requires a patient to wear a truss subsequently not worthy the name.

Dr. Halsted of Baltimore, in the May number of the *Annals of Surgery*, contributed a valuable article upon the radical cure of inguinal hernia in the male. His method is essentially that of Bassini and consists in a free dissection of the parts; lifting of the spermatic cord out of the canal and closure of the conjoined tendon to Poupart's ligament behind the cord, thus reënforcing the posterior border of the canal by the union of the parts by means of a double interrupted silk suture, "the mattress suture." He makes the incision sufficiently free to expose completely the parts, closes off the peritoneum by a line of interrupted silk sutures and forms a new internal ring. In order that the ring may be made as small as possible, he isolates the vas deferens and blood vessels of the cord and excises all but one or two of the veins. He closes the skin with superficial sutures without drainage and very properly emphasizes the importance of approximating the tissues with as little constriction as possible. More recently he has closed the external wound by the use of a continuous buried skin suture of silk without knots, which is withdrawn after one or two weeks.

In advocating the advantages of his method, Dr. Halsted writes: "To reproduce the equivalent, anatomically and physiologically, of the inguinal canal is I believe impossible. Moreover, we do not know that nature has made the best possible provision against hernia in providing, as it does, for the passage of the cord through the abdominal wall. Bassini's operation, although essentially the same as my operation, is different in some respects. First, Bassini always brings the cord through the muscles at the internal abdominal ring. The point out to which I transplant the cord is determined, as I have said, by the condition of the muscles; second, Bassini does not excise the superfluens veins. I believe that it is advisable to reduce the size of the cord, as much as is practicable; third, in Bassini's operation the cord lies posterior to the aponeurosis of the external oblique muscle; in mine, between this aponeurosis and the skin. To secure for the cord the position which Bassini recommends, an additional row of stitches is required."

Dr. Halsted reports his experience in extenso in fifty-eight cases. His first operation is dated June 6, 1889. There has not been a single recurrence in his cases where primary union supervened. He mentions six recurrences due to imperfect conditions of the wound.

In the same number of the *Annals* is an extremely interesting paper, entitled, "Observations upon the Mechanical and Operative Treatment of Hernia, at the Hospital for Ruptured and Crippled," by Drs. Bull and Coley. It includes the analysis of over 9,000 cases of hernia, or affections simulating hernia, up to Sept. 30, 1892. The portion of the article devoted to the mechanical treatment is worthy of especial study, but is of course foreign to the present discussion. The operative treatment is of exceptional interest, since it marks a radical change of methods hitherto employed at this hospital, and reverses in large measure the previous views of Dr. Bull which have been so widely quoted as demonstrating that operative measures, by whatsoever method attempted in order to effect a cure, usually resulted in failure. During fifteen months, forty cases were operated upon without a death, and in thirty-eight of these absolute primary union supervened. In reference to the suture material I quote: "The kangaroo tendon was also used in nearly all of the buried sutures in the Bassini operation and it has given the greatest satisfaction. The wounds have all healed by first intention, and there has been no tendency to the formation of sinuses as frequently occur when silk is used, and to a less extent with silk wormgut. The kangaroo tendon and the ox peritoneum seem to fulfill all the requirements of a buried suture in a hernial operation." . . . . "The propriety of operation has been amply justified by its slight mortality and its incontestable benefit in cases of strangulated and irreducible hernia. Even after relapse the majority of these patients find themselves better than before the operation. The reappearing protrusion is smaller than the original rupture and a truss is worn with greater comfort. An exception is to be noticed only in a few cases of relapse after the open method, or in those where, after other procedures, prolonged suppuration has followed.

These considerations lead to the conclusion that all open methods of operation, after which the wound is left to heal by granulation, should be discarded, and that *the feature* in every operation which is to give satisfaction should be *rapid primary union*. If this latter statement be accepted. we should further discard all methods in which foreign bodies, even though aseptic, silk and silver wire for instance, are buried in the wound."

In a letter from Dr. Coley, assistant of Dr. Bull under date of May 23, he states: "I feel greatly indebted to you for the kangaroo tendon suture and your efforts to make known its virtues. It seems to be the ideal suture for hernia. I introduced it at the Hospital for Ruptured and Crippled, and afterwards persuaded Dr. Bull to use it in the New York hospital. I have operated upon forty-four cases in children, mostly during the last year. With my adult cases at the Post Graduate, I have operated nearly sixty times and have had more than fifty cases of primary union. In fact, have never failed to get primary union where I have used the kangaroo tendon."

The progress of modern surgery is emphasized upon every hand, and the prophesy which I made years ago that the cure of hernia was no exception, is being widely fulfilled. The older anatomists understood quite as well as ourselves that, in the normal relationship of the parts, the inguinal canal is always disposed in a direction at or near a right angle to the intra-abdominal pressure, and in the maintenance of this is the principal reason why all males are not subjects of hernia. It is quite probable that the primal predisposition to hernia is owing to an arrest in the processes of development, which finds its minor expression in the infundibulum process, in the attachment of the peritoneum to the spermatic cord about the internal ring.

When we remember the late period of intra-uterine life at which the testicle descends into the scrotum, and the closure of the peritoneum about the cord takes place, we can easily understand why the parietal peritoneum at the internal ring usually presents a depression. This is often very considerably pronounced in men who have never suffered from hernia, the strong aponeurotic structures which close the internal ring having been sufficient to retain the intra-abdominal pressure at its normal angle. Change, however, the direction of pressure sufficiently to permit the wave-like impulses of the intestinal contents to impinge within the infundibulum, and little by little the barrier produced by the transversalis fascia yields; the internal ring enlarges by a depression of its lower border until gradually the line of intra-abdominal pressure becomes more or less parallel to that of the canal; the abdominal wall gives way under some sudden impulse and the patient recognizes that he is ruptured. That which seems to him a sudden accident is the result rather of a series of causes acting through a considerable period.

If we are correct as to causation, the study of which is of the greatest importance, it becomes us that we consider the essential factorage which must enter into the problem in any operation for cure. Although seemingly so simple, it will be found that the equation is a varying one, depending largely upon personal conditions which are ever subject to modifications. These may be grouped in a general way as follows:

First, intra-abdominal pressure; second, the condition of the abdominal wall; the development and tone of its muscles and connective tissue; the amount of fat; the size of the cord, which is oftentimes very greatly increased by enlarged veins; third, the pathological changes in the peritoneum; the sacs containing the hernial tumor which are most varied in character, demanding for the exhaustive treatment of this part of the subject a chapter longer than this entire paper; fourth, contents of the sac: the constituents of the hernial tumor, a condition of almost endless variety of detail which must be passed over without comment.

There is at the present time a general consensus of surgical opinion, that the contents of the hernial tumor having been disposed of, the sac itself must be treated in great measure as a foreign pathological body. Nearly all operators agree that in pronounced hernia it should be dissected free quite within the internal ring and by some method closed so as to minimize as far as possible the infundibulum process. Mr. Macewen, by the use of the whole or a part, proposed to return it within the ring in a manner to press from without inward and forward; to buttress, so to speak, the weakened internal inguinal ring by it. This was a wise disposition of the parts before it was thought practicable to reënforce in any way the posterior border of the inguinal canal and close from below upward the internal ring. Other operators contented themselves with twisting, ligating, or suturing in order to make tense the peritoneum about the ring. Dr. Bryant of New York, advocated in addition to this, the division of the sac and interweaving it between portions of the abdominal wall, so to speak, using it as a vitalized suture. This, however, proved disastrous in a number of cases, because of the impairment of the vitality of the parts from cutting off the circulation at the base which caused sloughing, and it has been practically abandoned by its distinguished author.

I have already given a brief resumé of Professor Kocher's method, who endeavors to utilize the sac in a somewhat similar way by forcibly twisting it upon its base, and when thus twisted to its very end, attaching it by sutures to the undivided external abdominal wall. I have been unable to gather from his paper the number of his operations performed after this method which, although carefully illustrated by a series of drawings, is referred to as his more recent device. His results as tabulated are admirable and yet evidently not all performed in this way. It is clearly apparent that, in a very considerable class of hernia, for instance the large old direct-irreducible hernia, this method would be inapplicable. By it, it is impossible to re-enforce and strengthen the structures posterior to the inguinal canal; to reform the internal inguinal ring; to restore the obliquity of the canal and change the line of intra-abdominal pressure.

Bassini's method is worthy of careful analysis and in all its essentials is not unlike that of mine. It is doubtless true that this distinguished Italian surgeon worked out the problem utterly independently, without knowledge of my labors in this direction, although my first publication upon this subject antedates his by quite fifteen years. By a free dissection the base of the sac is closed in an oblique line quite within the border of the internal ring, the cord is lifted from its canal and held upon the inner side by an assistant. The posterior border of the conjoined tendon is brought in apposition to Poupart's ligament by a line of continuous catgut sutures and closed from below upward quite upon the cord at its exit from the internal ring. The cord is then replaced and the strong aponeurotic fibers of the conjoined tendon and Poupart's ligament are closed down upon the cord by a similar line of continuous suturing, until the external ring is reformed. Suturing of the skin completes the operation.

Dr. Halsted's modification of Bassini's operation is different in that the cord is placed entirely external to the rejoined oblique muscle, re-enforcing posteriorly a new inguinal canal by all the strong structures that go to make up the abdominal wall. A new canal is constructed in the tissues just beneath the skin; although thus re-enforced Dr. Halsted thinks it is important to isolate and cut away all but one or two of the veins of the cord in order to reduce its size as much as possible.

Postemski has modified the Bassini method, apparently ignorant of Halsted's procedures, but differing from them in that he forms a new internal ring, one-half an inch or more above the upper border of its former site, and attaches the cord by loose catgut sutures to the connective tissue toward the median line external to the fascia of the great oblique muscle.

Dr. Fowler has still further modified this procedure by carrying the site of the internal ring as far as the length of the cord will permit, an half inch or more, above its former location and reversing the direction of the cord through the abdominal wall in its entrance into the abdomen. Thus the cord is carried forward and inward and held by loose catgut sutures to the fascia of the external oblique muscle, while the abdominal opening, represented by its former inguinal canal, is obliterated in its entirety and closed by a double row of figure-of-eight silkworm gut sutures.

History is said to repeat itself. Heliodorus describes an operation essentially like these latter methods under discussion. After him the evolution of the problem went on little by little, until it was safely worked out by the elimination, not alone of the inguinal canal and the redundant veins of the cord, but also the entirety of this troublesome complication was removed, and cures were easily effected at wholesale; castration being first performed, although the operators were in blissful ignorance of our troublesome painstaking antiseptic technique. In tracing the results of these innovations it is an interesting, although I grant a subordinate question, to ascertain the integrity and usefulness of this organ oftentimes overestimated in its physiological value.

Levity aside, it is important to follow the deductions which should guide us in the safe solution of the problem, and this to most minds would seem answered in restoring the parts to their normal anatomical and physiological relationship. Thus I assume that the inguinal canal, normally developed is long enough to make the internal abdominal pressure at a right angle of to its axis, and when this is effected little if anything further can be gained by the transplantation of the cord to a higher point through the abdominal wall. The upper border of the internal inguinal ring remains a sure and safe landmark for the fixation of the spermatic cord.

Mr. Cooper pointed out the extraordinary reenforcement of the transversalis fascia which normally fixed the internal ring and formed the posrior border of the inguinal canal. This is usually re-enforced also by a portion of the transversalis muscle. The great lateral protecting walls of the canal, as every anatomist knows, are made up, upon the inner border by the conjoined tendon, and upon the outer by Poupart's ligament. The thick fascia from the oblique muscles covers over the cord, making its external envelope. The lower edge of these reflecting fibers forms the external ring. Thus the cord lies easily movable in a fixed, firm canal, although its strong borders are subject to a considerable variety of changes.

It seems that the solution of the problem for the cure of hernia must be the restoration of the parts to their normal standard if possible. This was the problem which I set before me for solution quite twenty years ago. In order to accomplish it, it is clearly evident that the peritoneal sac must be entirely removed. Since the hernia has its origin in the deformation and shortening of the posterior wall of the canal, it seemed equally clear that some method must be devised for its reconstruction and restoration. This demanded a free dissection; first to deal properly with the contents of the sac; second, to free quite within the ring and eliminate this deformed peritoneal pouch. This having been effected it was a natural deduction that the posterior wall of the inguinal canal must be reformed, but to accomplish this, suture material must be used which could be buried in the tissues and there remain undisturbed. If arteries could be ligated with catgut, and the subsequent intervening processes show the constricted vessel surrounded by a newly-formed connective tissue band, replacing the ligature, the inference was that this material might serve a similar purpose when applied for closing the internal ring and reconstructing the posterior wall of the inguinal canal. This method I put in practice more than twenty years ago and published the results, being the first to advocate the advantages derived from the use of the buried animal sutures.

Having reformed the internal ring and the posterior border of the canal, there only remained the closure of the wound in order to effect the complete restoration of the parts to their normal relationship. This I have long believed is best effected by approximating the tissues in an even layer by means of the double continuous tendon suture.

To master the problem as thus outlined, the technique of the operation must be conducted with the most careful antiseptic measures, since otherwise primary union i the exception rather than the rule, and when suppuration ensues, the operation is followed not only by an almost necessary failure, but with a possible risk of life. But in these precautions I happily found safety owing to the early personal training received from the great master of antiseptic surgery. Ambitious operators very properly desire to improve upon previous measures, and probably to this more than any other cause, the profession is indebted for a great variety of detail, worked out with much enthusiasm, and a vast amount of clinical experience by which the subject has been greatly enriched.

If the essential factors are as above outlined, and the experience of a multitude of workers under improved methods is accepted as testimony, conservatively the verdict may be rendered; that inguinal hernia in the male can be safely and permanently cured; so safely that the collated experiences which within a year I have myself made of over 3,000 cases of hernia, operated upon, shows less than 1 per cent. of mortality. The results in the hands of these operators have been satisfactory, so satisfactory that from 80 to 90 per cent. are declared cured.

The surgical measures are not severe; the later operators declare that under modern aseptic precautions not more than 5 per cent. of the wounds fail of primary union. Even where cure has not been effected, in a great majority of the cases the condition of the patient has been much improved. The essential factor in addition to those above stated is, a wound in *aseptic* tissues, *aseptically* made and maintained. For reasons which I have emphasized elsewhere, there is great advantage in the use of buried animal sutures, preferably tendon, but whatever the material employed, the tissues must not be overconstricted, since approximation and retention at rest of the structures as little devitalized as possible are important factors in securing primary union in even an aseptic wound. The only dressing which seems entirely adequate and which also approaches the ideal, is the iodoform collodion seal which necessarily prevents infection entering the wound, while drainage is dispensed with and no sutures have to be removed.

I have no hesitancy in commending to the profession these measures, which generally are applicable to all wounds aseptically made, as the really essential factors which pertain as fundamental in the cure of hernia.

In reviewing the recent literature of the subject it has given me intense satisfaction to find that the fundamental principles of the operation, for which

I have so long contended, have been finally accepted and carried into practice by many of the most distinguished surgeons of Europe and America. It is with the utmost confidence that I contemplate the surgical relief which will be given to the great army of truss-bearing sufferers in a not distant future.

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# A STUDY OF THE RADICAL CURE OF HERNIA BY MARCY'S METHOD.

## WITH A REPORT OF EIGHT CASES INCLUDING OPERATIONS.

Read before the Gynecological Society of Boston.

BY ALBERT H. TUTTLE, M.D.
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The operation for the radical cure of hernia consists in the treatment of the viscera, peritoneal sac, the opening in the abdominal wall, and the incision of the skin.

Marcy's operation differs very materially from all others in three important respects, viz: the manner of suturing the rings with a perineal needle, taking a shoemaker's stitch; the suture material, kangaroo tendon, a non-irritating, easily made aseptic material which is very strong and capable of resisting absorption and softening for a very long time, sufficiently long for the complete metamorphosis of a plastic exudation into firm connective tissue; the restoration of the obliquity of the inguinal canal by a free dissection of the canal, the elevation of the cord, and the tight closure of the internal ring below it, the dropping of the cord, and the reformation of the canal by drawing together the tissues from either side over the cord with tendon and the shoemaker's stitch.

The advantage of the manner of stitching consists of the close apposition into which it brings tissues, the breadth of the opposing surfaces it affords, and the material thickening it produces in the already thinned-out abdominal wall.

The superiority of kangaroo tendon over silk as a buried suture depends on its being less irritable and less likely to act as a foreign body with the formation of a sinus, and slow healing. Although silk has been used successfully as a buried suture by many masters in surgery, there is evidence of its causing harm at times in an apparently aseptic wound. Catgut is absorbed too quickly unless over-chromicized, and then it may act as an irritant. All sutures which are brought out upon the skin surface for final removal, cannot be compared with the buried material, because they are removed early and leave the plastic exudate without support, then absorption as a rule rapidly occurs. There is none, or but little connective tissue formation, and the old breach may quickly re-form, within six weeks after the primary operation.

Three months after burying the tendon in the second operation, in case 2, it was removed in apparently the same condition as when inserted, and five months after the primary operation, tendon was removed in short pieces, which was pale in color, soft, somewhat thickened, easily broken, but retained its original shape. In both instances the tendon was surrounded by a dense mesh-work of connective tissue which was sufficient evidence of round cell infiltration that had undergone complete metamorphosis.

The restoration of the obliquity of the canal affords the natural means for strengthening the parts and helps to prevent a recurrence of the hernia.

An incision is made in the skin over the inguinal canal, and in the same direction, between three and four inches in length; the opening is widened by dissecting up with the fingers the skin and superficial fascia on either side, and the cord exposed. The canal is then opened by passing in a director above the cord and cutting with a scalpel the outer wall. It should be opened way to the top. The cord should now be separated from its attachments and drawn out with the sac, which in small indirect herniæ is usually found empty and concealed beneath the infundibuliform or fascia propria of the cord, so as to expose the rings.

When the gut is strangulated, the sac is carefully opened with the aid of a director and the internal ring cut above. Gerster's suggestion to cut the constriction from without inward instead of from within outwards is an especially valuable one. The gut is further drawn out and very carefully inspected before it is returned to the abdomen. If the peritoneal coat is smooth and shiny, the gut may be put back into place and the sac, if free from adherent omentum, closed with sutures passed through the neck. When there are adhesions between the omentum and sac they should be broken down and the bleeding points tied with animal ligature. If the omentum is deformed with many adhesions, which when separated leave large raw surfaces, with many bleeding points, or is reduced with great difficulty, perhaps only by enlarging the ring, to sew it off near the abdominal opening with a shoemacker's stitch, so as to include all the vessels, cut away the protruding portion, and close in the raw surface with an over-and-over stitch, may be considered better surgery than the reduction of the mutilated part.

If gangrenous changes have started in the gut, as indicated by the roughened peritoneal coat and greasy sensation to the touch, there are three ways of proceeding: when in a doubtful condition, enlarge the opening in the abdominal wall sufficiently to allow free circulation in the gut, draw further out the strangulated coil so as to expose about an inch that is in a normal condition, pack aseptic gauze lightly about and under the coil so as to prevent the spontaneous return of the bowel, and keep the parts covered with sterilized hot wet cloths wrung out of a normal salt solution. In this manner the changes in the circulation of the strangulated gut may be watched for several hours if necessary, during which time the patient is maintained under ether narcosis, and, if the circulation shows signs of returning in the strangulated portion by a change of the dark color to a paler, redder hue, the parts may be immediately repaired.

When gangrene of the gut has taken place, one can resort to a resection with the formation of an anastomosis by some one of the various perfected methods, or an artificial anus may be made, and the gut sewed into the inguinal wound, or the gut can be fastened with a few stitches to the edges of the opening and after dressing the wound aseptically, left to the care of nature. In either case the prognosis is very bad and depends as much upon the condition of the patient at the time of operating, as upon the severity of the operation *per se*.

The treatment of the sac is a very important matter and, as a rule, the most difficult part of the operation for a radical cure. It should be dissected out in every case where it is possible to do so except in young children, and all traces removed from the edges of the internal ring. As it lies flaccid in the canal the sac can hardly be distinguished from the elements proper to the cord, and it must be opened near the neck by a careful dissection with a director and scalpel, while one bears in mind that it may be confined in the sheath of the cord, under the fascia propria, then separated all around from the tissues forming the internal ring, and finally stripped off from the cord and other adhesions, from the neck downward, that one may be sure of its complete removal from the hernial canal. The sac should then be freed from any contents, the neck sewed off, the remains excised, and the stump dropped into place. Unless this is properly done there will be a peritoneal pouch that extends into and acts upon the canal every time there is any abdominal straining, very much like a bag of water before the advancing head during parturition, which finally may effect a dilation of the rings and reproduce the hernia. This is due to the fact that if the sac is not entirely separated from the internal ring and sewed off by itself the complete closure of the neck is attended with great difficulty and one has no means of determining that a small pouch is not left immediately beneath the cord, or that a part of the sac is not included in the sutured edges of the internal ring. When the sac is not entirely removed from the hernial canal it becomes a weak point in the operation for radical cure to the hernia and was the probable cause of failure in many of the earlier operations, especially those where the ring was closed without making an incision in the skin.

The final steps of the operation consist in closing the internal ring tightly with a line of shoemaker stitches, starting from the lower margin of the ring and working upward; the closure of the external ring after the cord is dropped back into place, by drawing together the tissues on either side, with an over-and-over stitch, so as to cover over the cord; the approximation of the edges of the skin wound with a continuous buried suture; and the sealing of the line of incision with collodion reinforced by a few fibers of absorbent cotton.

*Case 1.*—Clarence S., age 41 years, has had an oblique inguinal hernia for twenty years on the right side for which he has worn a truss fourteen years, and on the left side he has had a similar hernia for four years. A short time before operating the gut had slipped down the canal and was returned only with great difficulty under narcosis, and at the time of operating a bunch was found in the groin which proved to be strangulated omentum undergoing a process of suppuration.

Operation Nov. 20, 1891. The right side was treated by dissecting up the cord and closing the rings without interfering with the sac; the incision in the skin was repaired in the usual manner. On the left side the sac, including omentum, was tied off at the neck and the canal and skin closed except at the lower angle, where a strand of tendon ligature was brought out to act as drainage.[1]

The wounds healed quickly, all but the open end on the left side, by first intention, and for about four months there was an apparent cure, when the abdominal wall began to bulge at the inguinal rings on both sides and soon afterwards the herniæ were reproduced.

May 9, 1892, the case was again operated upon, this time by Dr. Marcy, who closed the rings and wound without dissecting out the sac. Both wounds healed by first intention, but in from four to six weeks after the operation small multiple abscesses formed at the site of the incisions, which would discharge, rapidly heal, and then break down again. They did not appear like ordinary abscesses, but more like a retrogressive degeneration of tissue without inflammatory changes. Treatment by antiseptic cleansing and dressing did not apparently modify the course of this trouble, but as soon as a truss was applied with pressure it immediately ceased. However, before this measure of relief was adopted, the abdominal wall became quite thin from the breaking down of tissue, and although by wearing a truss the patient experienced no trouble until fall, a direct abdominal hernia then developed above the cord, near the upper limit of the internal ring but unconnected with it, on the right side.

To relieve this last trouble a third operation was performed by Dr. Marcy, Feb. 14, 1893. The sac was opened and found to contain adherent omentum; this was freed from its adhesions and a large portion sewed off and removed. The sac was tied at the neck and the stump returned to the abdomen. The operation was finished in the usual manner. Healing occurred by first intention, but at the end of a month the tissue again began to break down the same as after the first operation, and the patient was advised to wear a supporter with a large hair pad. May 1, a small abscess formed and since the patient has been free from trouble. July 15, there was an apparent cure.

*Case 2.*—An oblique inguinal hernia in a feeble male child 3 months old. Operation Dec. 8, 1891. The cord was raised and the ring closed by a simple over-and-over stitch. The collodion dressing became loosened from the action of urine at the end of two days and was removed, the skin carefully cleansed with a bichloride solution and dried, and a fresh collodion seal applied. Healing occurred by first intention and resulted in a radical cure of the hernia.

*Case 3.*—Charles G., age 40 years, has had an old oblique inguinal hernia on the left side. Operation Feb. 2, 1892, without excision of the sac. Healing occurred by first intention and it looked for a while as though a radical cure would be the result; in July, however, there appeared a swelling over the ring which seemed to indicate a return of the hernia, but which slowly disappeared and the patient did very well until March, 1893, when the parts were strained severely by coughing and lifting and the hernia was reproduced.

*Case 4.*—Arthur B., age 27 years, has had an oblique inguinal hernia on the right side since childhood. Operation June 15, 1892. The ring was closed without interfering with the sac, healing occurred by first intention and a radical cure of the hernia followed.

*Case 5.*—William S., age 25 years, has had an oblique inguinal hernia on each side for some time and for which he has worn a double truss. Both sides were operated upon for the closure of the ring without the obliteration of the sac, August 1, 1892, and healed by primary union. The right side was radically cured, but the hernia on the left returned and a second operation was performed Dec. 8, 1892. The sac was untouched, but the canal was carefully opened and the ring sewed up tightly about the cord so as to shut off the lumen of the sac at the neck. About six weeks after the operation the patient slipped on the ice, and in the attempt to save himself gave the side a severe wrench, which immediately opened the ring and let the gut down. A third operation was thereby necessitated and performed March 9, 1893. This time the sac was opened, dissected out, ligatured and removed and the smooth edges of the internal ring, very much thickened by the former operations, were scarified and tightly approximated; the canal and skin wound were closed in the usual manner. The parts healed by first intention and there is every reason to expect a radical cure.

*Case 6.*—Leah G., age 55 years; married but never has been pregnant; has had an inguinal hernia for five years. The sac was a large one, extending as far as the labia and united to the surrounding tissues by firm adhesions. Strangulation occurred Feb. 28, 1893, and continued six hours and till the time of operation. The gut was found deeply congested and of a bluish hue, but with a smooth glistening peritoneal coat. It was returned to the abdomen, the sac carefully dissected out and excised, and the operation finished in the usual manner. Although careful aseptic and antiseptic precautions were used, the wound became infected and healed by a slow process of granulation, which was greatly retarded by the presence of the deep buried suture; however, the case finally recovered and the hernia has shown no evidence of returning.

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[1] As buried tendon or animal ligature of any kind will almost always cause trouble in a septic wound and sooner or later have to be removed unless early absorption takes place, it must be considered a bad practice to drain a wound in this manner. If there is any question about the aseptic condition of the wound, it is better not to use a continuous suture nor to bury it so that it can not easily be removed in case of necessity. To drain an aseptic wound in this manner offers an unnecessary path for possible infection.

Since writing the above I have operated on two cases:

*Case 7.*—Richard S., age 47 years. On the left side he has suffered from a direct inguinal hernia for nearly one year and April 20, 1893, another suddenly developed on the right side. Two days later both sides were operated on and the sac carefully dissected out and excised, primary union occurred and promises well for a radical cure.

*Case 8.*—Alley S., age 11 years, was seen July 2, 1893, with a strangulated inguinal hernia complicated by an undescended testicle, which lay directly in the canal. The gut was returned to the abdomen with some difficulty under narcosis and then it was found impossible to wear a truss owing to the presence of the testicle. Therefore it was deemed best to make an incision, sew up the ring, and if possible, bring the testicle down into the scrotum. The tuuica vaginalis, testicle and cord were dissected out *en masse*, the ring closed without opening the sac, the tunica opened and its contents inspected, the cord stretched as much as possible, a pocket made in the scrotum by inserting into it the fingers, the testicle and its tunics were partly brought down and the skin of the scrotum was brought up until the parts were nearly in their normal relation and fastened firmly by a suture that passed through the skin at the bottom of the scrotum and the cut edges of the tunica, and brought the bruised surfaces of these membranes into close apposition. The parts healed by primary intention, and as a result of the swelling and subsequent absorption natural to the process of repair, the traction exerted by the scrotum in seeking its normal position and perhaps the aid rendered by the force of gravity the testicle has descended still further, and at present is in a position out of harm's way. It is too early to decide the question of cure of the hernia.

In reviewing the above cases the value of excision of the sac is at once manifest; some cases cannot be cured without this procedure and there is always a great risk of a return of the hernia where the sac is left. The difficulties in cases one, three and five, came from this source; the excision of the sac on the left side in case one, was performed after a ligature had been passed simply about the neck and therefore the adherent omentum was contained between its cut edges and prevented proper union. In young subjects the hernia is usually of the nature of the congenital variety and the simple closure of the ring pinches the neck of the sac together, sets up a local irritation, and promotes the natural obliteration of the communication between the cavities of the peritoneum and tunica vaginalis.

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## THE NEW TREATMENT OF HERNIA.

Read in the Section of Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

BY ALEXANDER DALLAS, M.D.

NEW YORK.

In venturing to call your attention to some new points in the treatment of hernia, I assume that you are all familiar with the methods now in use and the unsatisfactory results obtained by them. With our 3,500,000 of cases of hernia in this country—a ratio of thirty cases to every practicing physician—the great importance of the subject is self-evident. Of this large number, over 80 per cent. are inguinal and my remarks will refer more particularly to that variety.

The treatment of hernia may be divided into, first, the palliative; second, the mixed; third, the treatment of strangulated hernia; and fourth, the "radical cure."

*First, the Palliative.*—The palliative or mechanical treatment of hernia includes all measures used to prevent the descent of the hernial protrusion, but more particularly, the employment of trusses of various descriptions.

To the general practitioner this is, unquestionably, the most important method of treatment, for all cases of hernia are first seen by him and every case of rupture at some period of its existence is subjected to palliative treatment. It behooves him, therefore, to thoroughly acquaint himself with the principles underlying palliative treatment, to recognize its limits and to know how best to secure the most satisfactory results. And, yet, few practitioners know anything about trusses; fewer still know how to apply them, for they carelessly delegate these important duties to the druggist's apprentice or the truss vender.

Truss treatment, it should be clearly understood, is purely mechanical and its full benefits can only be secured by careful personal supervision. In *congenital hernia*, the exclusion of all foreign bodies from the vaginal process of the peritoneum permits of the contraction and obliteration of the canal which would otherwise naturally have occurred and a cure is speedily effected. In *acquired* hernia, before the sac has attained a separate existence of its own, the pressure of a properly adjusted truss restores the peritoneum forming the sac to its natural situation, the cavity of the sac is effaced and the peritoneum recovers its former polish and elasticity. In this way, cures sometimes take place in adults but can hardly be expected in old people. When the sac has acquired an independent existence, the action of the truss is still purely mechanical. By preventing the entrance of gut or omentum, it places the parts in the most favorable condition to undergo those changes of gradual contraction and obliteration by which all hollow parts of the body adapt themselves to their contents.

To insure success in "palliative treatment," it should be commenced as soon as a disposition to the formation of a hernia is detected. By the prompt initiation of treatment and its judicious continuance under the personal supervision of the surgeon, many cures can be effected where failures are now the rule, This is particularly true in the hernia of childhood where palliative measures are almost invariably sufficient to effect a cure.

Of equal importance is the selection of a proper truss. Some claim that there is no lack of good trusses in this country but a very limited practical acquaintance with them will prove how utterly erroneous this statement is. A good truss should be light, so as not to burden the patient; strong enough to prevent protrusion; sufficiently elastic to follow the abdominal movements; firm enough not to be easily displaced; so arranged that it does not press injuriously upon important organs nor interfere with the movements of the body; and so adjusted that it presses directly over the internal ring and is retained there. This latter is, unquestionably, the most important point in all truss treatment for, if the internal ring be not permanently closed, all hopes of a cure can be abandoned. To make effective pressure there should be a back pad as well as a front pad so as to secure greater accuracy with less pressure. Each hernia should have the truss specially adapted to it; the pad and the spring should be regulated by the case. It should be inspected at regular intervals and the pressure increased or diminished as the case may demand. And the surgeon should remember that after the unavoidable inconvenience of the first few days, any further pain or discomfort is unquestionably due to an ill-adjusted or improperly made truss and its continuance is unnecessary cruelty.

A careful examination of the trusses now in use will at once show how imperfectly they meet these indications. Many of them are burdensome by their weight while most of them are unnecessarily strong, causing atrophy of the parts against which they press. They all interfere with the movements of the body and are themselves kept in constant motion, causing painful excoriations of the skin. Not one of them can be *retained* over the internal ring, for they all gravitate downward until they rest upon the pubic bone. As a result, they exercise injurious pressure upon the spermatic cord, giving rise to severe pain and discomfort and inducing a nervous irritability which gradually undermines the system. In all of them, the pressure of the pad upon the external ring is upward and backward, causing pouting of the internal ring, thus predisposing to the constant presence of a bubonocele and preventing the possibility of a cure.

In an endeavor to overcome these objections, I here show you a truss which I have been using for several years and which has given me more satisfaction than any I have tried. It is light and cool. It rests upon the crest of the ilium, an immovable support, and is not affected by any of the movements of the body. There is no constricting band around the hips to cause atrophy of the muscles and to interfere with every motion. As a result, there is no incessant disturbance of the pad, and consequently no excoriations to heal up. The belt passes down the sides of the abdomen, closely hugging the abdominal walls, thus breaking the lateral recoil of the intestines which causes the protrusion, and acting as an auxiliary to the pad. The pad, itself of hard rubber, is small and somewhat quadrilateral in shape; its lower outer angle cut off to fit into the fold of the groin; its surface flat or slightly concave, to adapt itself to the convex abdominal walls. Running from the center of the face of the pad to its lower edge is a gradually deepening groove which prevents compression of the spermatic cord. The pressure exercised by this truss being applied from above downward, is slight, comfortably borne and directly over the internal ring and upper part of the canal; and it is the only truss by which pressure can be retained there. Another important feature is its ease of application. Once properly adjusted, it can be taken off by the patient and reapplied without fear of displacement, a fact which cannot be said of any other truss with which I am acquainted. As all spring trusses should invariably be removed at bed-time, to be reapplied on getting up, the importance of this will be readily appreciated.

When the truss has been applied the medical attendant seems to think that his work is done. As a matter of fact, the real treatment of the case has just commenced if he expects to obtain a cure. The patient should be kept under the surgeon's supervision and should be carefully examined at regular intervals to assure himself of the perfect retention of the hernia as well as, in the case of children, to provide for their rapid growth. Perfect cleanliness should be preserved, and all causes that operate to prevent or retard nature in her efforts at repair should be removed. The digestion should be carefully looked after. Constipation should be prevented. Vomiting or straining from any cause should be avoided, as well as excessive bodily exertion, and where the patient is obliged to make any considerable effort he should be taught to support the pad with his hand. The persistence of any of these causes may hinder or even completely destroy all chances of cure directed solely to the hernial protrusion.

At the same time, efforts should be made to develop and strengthen the weakened tissues by massage, electricity and gymnastic movements of various kinds. No spring truss should ever be worn in bed. In most cases it is unnecessary, in all it is harmful. When it is considered desirable to have some support, as in children, the truss should be removed at bedtime and replaced by a "hank truss" or home made bandage.

*Second, the Mixed Treatment.*—When, after a fair trial, the palliative method of treatment has failed other measures have at various times been tried, but the uncertainty of their action and the temporary character of their results have caused them to pass into disuse. To obviate these difficulties I have devised an instrument which is applicable both in inguinal and femoral hernia. It is simple in its application; it is definite and exact in its results; it is entirely free from danger, and the confinement necessitated by its employment is of short duration. The patient's consent can be readily obtained and its use can be safely recommended in all suitable cases. Finally, its results will compare very favorably with those of other and more dangerous measures. The instrument consists of a head and shaft or handle. The head is flattened and its point smooth and blunted. Its anterior and posterior surfaces and outer edge are covered with fine needle pointed projections while its inner surface is smooth and occupied by a deep groove. The cover of the shaft is movable, and while the instrument is being introduced is pushed forward so as to cover completely all the serrations, and present a perfectly smooth rounded surface. In operating, the parts are prepared in the usual way, while the instrument is rendered thoroughly aseptic by boiling. Twenty to thirty drops of a 4 per cent. solution of cocaine are injected into the field of operation and a transverse incision one inch long is made through the integument just below the external ring. The fascia is carefully separated and the spermatic cord gently lifted towards the inner wall of the canal. The instrument is now introduced, the groove turned towards and embracing the cord and cautiously insinuated through the canal until its point is felt free in the abdominal cavity. The shield is now removed and the instrument slowly withdrawn during which the whole interior surface of the canal, except the portion covered by the groove, is abraded and freshened. The surfaces are pressed together as the instrument is being withdrawn so as to prevent any unnecessary effusion of blood; the external wound is closed and sealed with iodoform collodion; a firm compress is placed over the canal and retained in position by strips of plaster and a bandage; and the patient is kept in bed for a few days until all local tenderness has passed away. By this simple method we at once secure complete agglutination of the walls of the canal and consequently a firm and permanent cure without pain and with only three or four days confinement to bed. A light truss with a grooved pad is then adjusted and the patient allowed to go about. At the end of two or three months the truss can be discarded, the measures already described being used meantime to strengthen the parts.

This operation is applicable in all *recent* cases of acquired inguinal and femoral hernia and in all cases of congenital hernia, even of long standing. (It can be used in any case where the canal has not become obliterated by the pressure of the protruding viscera.) In femoral hernia the incision is made over the saphenous opening, the groove is turned toward the femoral vein and, in the after treatment the leg should be well supported. In the cases in which I have used it the results have been most satisfactory and entirely successful. By the early and judicious employment of these two methods much good may be accomplished and the necessity for radical interference can in the future be largely limited to long standing hernial tumors of large size, associated with adhesions or other complications.

*Third, the Treatment of Strangulated Hernia.*—The sudden onset of strangulation, with the dangerous and alarming symptoms accompanying it, invests these cases with an interest and importance to the surgeon which cannot be over estimated. Measures, therefore, for its reduction should be immediately adopted and should be persisted in until relief has been secured. Many lives are sacrificed every year by improper treatment and delayed interference. The measures usually employed now are anæsthetics, taxis and herniotomy, although other adjuvants are sometimes used.

Now the administration of an anæsthetic requires the presence of an assistant and it invariably produces more or less depression; while its long-continued use is never free from danger. It is generally followed also by more or less vomiting; and it is sometimes difficult to determine whether the persistent vomiting is due to this or depends upon imperfect reduction of the hernia. In regard to taxis as ordinarily used, its employment is extremely hazardous. All authorities agree that the frightful mortality which now exists in cases of strangulated hernia is directly attributable to violent, ill-directed and protracted taxis, and to the consequent delay in operating. Cold, in the shape of ice-bags, etc., although strongly recommended, endangers the vitality of the already enfeebled tissues, and should never be employed, while hot applications can be used with safety and are far more agreeable and beneficial to the patient. Ether irrigation is sometimes used although Finkelstein, its chief advocate, only claims 53 per cent. of successes in cases of enterocele; in epiplocele he admits it is of no value.

Even in the hands of experts, the results of all these measures are unsatisfactory; hence, a method of treatment which is free from the disadvantages and dangers of those now in use, which is so simple that any one can use it and so successful that all cases yield to it, must commend itself to the favorable attention of the profession. For fifteen years it has been under test and so far there has not been a single failure. The patient is placed in the recumbent position, the hips raised, the knees bent on the body and the tumor supported. A hypodermic injection of morphia $\frac{1}{4}$ grain, atropia $\frac{1}{120}$ grain, cocaine $\frac{1}{6}$ grain, is at once given in the neighborhood of the rupture, and repeated every fifteen minutes until the patient is comfortable. Meantime, he is made to drink, every five, minutes from two to four ounces of a hot mixture consisting of: strong black coffee one pint; fluid extract of ergot two to four drachms, and when the pulse is weak and compressible, strychnia $\frac{1}{60}$ grain. At the end of half an hour the rupture has become flaccid and disappears, or gentle manipulation reduces it. I have never had to give the second dose nor have I had to wait over half an hour to secure reduction, while the necessary manipulations never exceeded two minutes. No anæsthetic was ever used or required. If, however, there should be no change in the tenseness of the tumor the same quantity of the mixture should be given during the next hour and, if reduction cannot then be effected the knife should at once be resorted to.

The advantages of this method of treatment are obvious. By the injection the pain and distress are at once alleviated and confidence inspired, an important item in these cases. At the same time gastric irritability is allayed and vomiting becomes much less frequent or even ceases, while the muscular tissues freed from irritation become relaxed. The fact that no anæsthetic is required is a decided advantage, for it prevents the employment of excessive and long-continued taxis and the injuries arising from it. At the same time it obviates the depression which its administration causes. The amount of taxis necessary for the reduction of the hernial tumor, after the administration of this mixture, is so slight and of such short duration that no injury can be inflicted upon the contents of the sac and reduction *en bloc* is impossible, while if operative measures are immediately resorted to on failure of the second attempt no unnecessary delay will be incurred and mortification of the bowel will become a rarity.

The fatal delay in resorting to operative interference is mainly attributable to the fact that many medical men do not seem to realize the dangers incurred by a continuance of the constriction, and look upon the operation as a last resource; and they will not consent to its use until death is imminent. The operation itself is not a dangerous one; the condition that demands it is exceedingly so. Its performance, indeed, is harmless compared to the danger incurred by allowing the constriction to continue. Many have to deplore its performance too late; no one regrets resorting to it too soon.

*Fourth, Radical Treatment.*—When the milder measures have failed and reasons of necessity or expediency demand further interference, resort to the so-called "radical cure" may be entertained. Unfortunately there is too great a tendency nowadays to resort to cutting under any and all circumstances, but it is well to remind enthusiastic advocates of promiscuous operating that the "radical cure" operation is always a serious one and jeopardizes the patient's life, while the results obtained are not always commensurate with the risks incurred. Under the most favorable circumstances the mortality ranges from 2 per cent. to 5 per cent., and there is no reasonable assurance of a successful result. It should never, therefore, be lightly resorted to nor its acceptance urged upon the patient without proper cause.

Of the numerous methods employed, not one commands the respect of any considerable body of the profession. This is mainly due to the fact that no two agree on the essential objects to be accomplished and the best methods of securing them, as well as to the unsatisfactory results obtained. A careful study of the different steps in the formation of an inguinal hernia will indicate the only method by which the injury can be repaired. The first step is the bulging or giving way of the parietal peritoneum, the sac of the hernia. Unless checked this gradually insinuates itself into the opening in the transversalis fascia forming the internal ring, causing a gaping or pouting of the lower lip. The hernial tumor then forces its way through the canal displacing the tissues of which it is composed, particularly the outer wall of the canal, and finally appears at the external ring.

The indications to be met to insure success are: first, the restoration of the peritoneum to its normal condition as near as possible, so as to permit of the free gliding movement of the bowels over the surface. To accomplish this the sac should be freed from all adhesions, the peritoneum loosened for some distance around the internal ring and gently pulled down, and the whole length of the sac should then be cut away, not only to obliterate the depression of its surface, but to remove every portion of the peritoneum which has become more or less altered from stretching. For the same reason the cut surfaces should be sutured together so as to present as smooth a surface as possible. When tied in a ligature there is more or less puckering which resists the free movements of the bowels over its surface; second, the pouting of the lower lip of the internal ring should be obliterated so as no longer to invite intrusion of the bowel, while the displaced external wall of the canal should be approximated to the inner wall, the better to support the peritoneum and transversalis fascia. This can be accomplished by passing two sutures parallel with the outer line of the canal as in the Macewen operation, the upper one including the lower edge of the internal ring. In large herniæ where the whole external wall is displaced, it would be well to insert two sutures in the same way along the inner line of the canal. In large old herniæ, where the internal ring is much dilated so as to be opposite the external ring, it will be necessary to freshen the hardened edges of the ring and suture them together with a continuous double suture. Every step of the operation should be done under the strictest antisepsis; all dead pockets should be avoided as they serve only to collect blood and serum; drainage tubes should not be used, if possible, and every effort should be made to secure healing by first intention, as it materially increases the prospects of success.

To be effectual and permanent, therefore, the operation must produce obliteration of the hernial sac, closure of its ventral orifice and strengthening of those weak parts in the abdominal parietes through which the rupture protrudes. At the same time, measures must be taken to produce an improved tone of the general system, particularly of the peritoneal ligaments of the viscera, by which the power they exert in retaining the organs in their normal position is restored. The more this is accomplished, and the closer the processes of nature are imitated, the more perfect the result; but no operation can be considered a "radical cure" that does not enable the sufferer to dispense with the use of a truss.

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**Hospital Closed.**—The Binghampton (N. Y.) City Hospital has been closed, the Common Council having refused to vote the money for its support.

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# STRANGULATED HERNIA.

Read at the Meeting of the Inter-County Medical Society, held at West Superior, Wis., July 11, 1893.

BY WILLIAM E. GROUND, M.D.

SUPERIOR, WIS.

I would like to consider with you to-day the subject of strangulated hernia. Probably the two most important surgical subjects before the profession just now are appendicitis and hernia. Every cemetery contains the graves of patients who have unnecessarily died from these affections.

The frequency of hernia varies somewhat at the different periods of life. It is met with very frequently during infancy. During early life it is generally of the congenital inguinal variety and is more common on the right than on the left side, probably owing to the fact that the root of the mesentery occupies a lower position on the right side. The greater proportionate length of the mesentery in infancy greatly favors the occurrence of hernial protrusions of the intestines during that period of life. Mr. Lockwood has shown that the mesentery in the infant measures one-fifth the length of the body, at puberty one-eighth and in adult life one-ninth. After early life the frequency of hernia diminishes rapidly, until after puberty. From puberty the number grows larger as age advances until at the age of sixty, it has been said that one in four or five are ruptured. Taking the human race as a whole, it has been estimated by surgeons of large experience that from one-sixteenth to one-eighth are afflicted with this complaint. While it is generally admitted that hernia occurs most frequently in the laboring classes, there are many conditions in those of more sedentary habits which must necessarily favor the escape of the various abdominal viscera.

Among the factors operating and in a general way favoring hernia may be mentioned heredity. Not that there is any direct transmission but rather the conditions that predispose to it, viz., the weakness of abdominal wall, openness of the rings, long mesentery. The stretching of the abdominal walls by pregnancies render lax the pelvic peritoneum during the child bearing period, and thus greatly favors the occurrence of femoral hernia at that time of life. The increase of volume and weight of the omentum by the deposit of fat favor the occurrence of hernia. Weakening and debilitating diseases cause the tissues to become relaxed and in that way encourage hernia.

Certain necessary anatomical conditions or defects in the abdominal wall renders hernia possible. They may be natural weaknesses or exaggerations of the natural, if I may be allowed the use of so far-fetched an expression, or the retentive powers of the abdominal walls may be diminished by traumatisms, either intentional or accidental. Men have larger inguinal rings; women have a larger femoral arch, and one less filled in by muscles and less strong fascia.

Conditions being favorable certain immediate influences may result in the production of a hernia. These are lifting, coughing, crying, and straining to expel urine or feces.

A hernia is generally enclosed in a sac consisting of a protruded portion of the peritoneum. The peritoneal protrusion may have been pushed gradually through one of the openings as in the acquired inguinal form, or the process carried down by the descent of the testicle may remain patent, so that the tunica vaginalis may form the sac in the congenital variety.

Femoral hernia is never congenital.

In inguinal hernia the parts that immediately concern us are the external and internal abdominal rings, and the inguinal canal. Still, it must be remembered at the outset that the rings and canal are only potential—they do not exist as rings or canal save when opened by a protrusion of the abdominal viscera or made so by a scalpel.

The separation or gap in the aponeurosis of the external oblique, called the external ring, allows the exit of the testicle and the spermatic cord in the male, and the round ligament of the uterus in the female. The size of the opening and the development and strength of its pillars and the fascia covering it vary greatly.

The internal ring is merely a funnel shaped expansion of the transverse fascia which the cord carries on with it as it escapes from the abdomen.

The flat sided passage in the abdominal wall between the external and internal rings is the inguinal canal. In very early life there is no canal, one ring lying directly behind the others to facilitate the passage of the testis. In the adult it measures about one inch and a half in length. The increased obliquity gives additional security.

A fullness or swelling out at one of the weak spots of the abdominal wall, which is more evident on standing, and which is especially noticeable when coughing or lifting, with the thighs flexed, is characteristic of the first appearance of hernia. It is a smooth uniform swelling which usually disappears when lying down to again reappear on standing. When the patient coughs or strains the tumor becomes tense, rises under the hand and expands in size. This manifestation is called the impulse and is generally characteristic of non-strangulated hernia.

Every organ in the abdomen has been known to have been herniated except the pancreas. The most common contents, however, of a hernial sac is some part of the intestine, usually the small bowel, or the omentum, or both.

A hernia may be reducible or irreducible. It may become incarcerated, inflamed or strangulated.

A hernia is said to be strangulated when the herniated portion of the bowel or omentum is so tightly constricted as to cut off completely the circulation. The whole circumference of the knuckle of bowel may be involved, or only one side of the loop, so that the channel is not completely closed, or only part of the circumference of the bowel protrudes and becomes strangulated, as in Richter's hernia. In this case only a portion of the intestinal canal is involved, and the bowels often continue to act during the period of strangulation. The vermiform appendix occasionally becomes herniated, either by itself or with the bowel or omentum. I, myself, have seen two such occurring in the practice of others. Brieger (*Archiv. für klin. Chir.*, Bd. 45, Hft. 4) reports twenty-two cases collected from different sources.

Whatever the contents of a hernial sac may be, the symptoms of strangulation are very much the same, though perhaps they differ much in degree.

The onset of strangulation is usually sudden, occurring generally while lifting or straining at stool, or doing some other exertion, especially when the thighs are flexed and adducted. Strangulation, however, may be gradual. But whether rapid or slow the effect is the same: the only difference is the length of time and the amount of constriction. The symptoms are generally so clear and well marked that a mistake in diagnosticating the condition is hardly possible; but occasionally cases are met with that are very puzzling. Because it is the most recent and standard work of surgery I quote from the American Text-Book on Surgery, page 778, the following diagnostic signs: "The symptoms of strangulated intestine are always the same, whether the strangulation occurs in the abdomen or outside of it, viz., faintness, collapse, severe abdominal pain chiefly referred to the umbilical region, complete constipation, so that flatus ceases to pass, then vomiting first of the food, then of bile-stained fluid, and finally of fluid with a fecal odor. The tongue is dry and brown and the pulse rapid. In strangulated hernia there are in addition, at first pain at the seat of rupture, a greater degree of tension, the tumor having increased in size, dullness on percussion over the hernia, and absence of impulse on coughing, with the fact that the tumor is irreducible. If unrelieved the abdomen becomes much distended, retching is more frequent and thirst intense, hiccough sets in, the urine is much diminished in quantity and the patient gradually sinks from exhaustion in eight or nine days, though in very acute cases he may die in forty-eight hours. The bowel by this time has become gangrenous or there is a general peritonitis. With the onset of the gangrene there is often a cessation of the more urgent symptoms as vomiting and pain. Often the symptoms are not so severe as just described, especially in femoral hernia. In recent herniae the symptoms are more acute than in old herniæ and they are not so urgent when omentum is protruded with the bowel, or when the tumor has for some time been irreducible."

I thus quote at length because there are some important features to which I desire to call special attention. There are perhaps few surgical emergencies calling for more prompt and judicious action than strangulated hernia; and the question as to whether we shall operate at once or delay and palliate, is of supreme importance to the life of the patient. A few moments of hesitancy and doubt on the part of the surgeon, and the patient may be lost. So, gentlemen, if I appear a little tedious on this particular point I hope you will pardon me, for I can assure you I have felt keenly my responsibility as I have been brought to face these conditions.

The degree of collapse varies with the acuteness of the obstruction and the portion of the bowel obstructed. Thus, Mr. Treves states that the jejeunum with its richer blood and nerve supply would resent an injury more energetically than the lower parts of the intestines, where there is less functional activity. The collapse and vomiting are due largely to the impression made on the great abdominal nerve plexuses by the pinching of the nerve filaments in the gut.

Vomiting may come on early or late in the progress of the case. When it does occur it rarely ceases until the strangulation is relieved or the patient dies. At first the vomited matter consists of undigested food, then of bile and later there comes up great gushes of a dark brown muddy liquid of an intensely offensive fecal odor. No matter whether the vomiting appears early or late it is a symptom of grave omen. In a case of hernia in which any change has taken place in the condition of the tumor; such for example as an increase in size or tension with pain, and absence of expansile impulse, should be regarded as strangulated and treated as such. Do not wait for vomiting and other signs of intestinal obstruction. Vomiting is not a necessary condition of strangulation in the early stages and may not appear until gangrene is well established and septic peritonitis is present, and the powers of the patient so reduced as to often forbid a hope of recovery.

Pain may be very severe or it may be scarcely noticed. It may be at the seat of rupture and there may be wandering colicky pains all over the abdomen, but in nearly all cases there is a fixed dragging pain referred to the umbilicus.

Constipation is almost always present and is due, *not necessarily to intestinal obstructions, but to the* paralyzing effects on the visceral nerve supply. For we may have absolute constipation, and in fact generally do have constipation, where the herniated part consists only of omentum, or the appendix, or where the herniated part of the circumference of the bowel is included in the constriction and the canal is not obliterated, as in Richter's hernia, offering no mechanical impediment to the passage of fecal contents and gas; and further, we may have all the essential symptoms of strangulated hernia, such as vomiting, pain, constipation and collapse; but upon operating the sac is found to contain neither bowel nor omentum, only a little fluid, with no communication with the abdominal cavity; the operation, however, completely relieves the symptoms. While obstinate constipation is the rule, still Treves found three cases in fifty-three in which there was diarrhœa, and several that responded to laxatives.

The local symptoms are generally quite prominent. If the hernia is old and large and has been down many times, the size is likely increased and it may be fairly soft. Small strangulated herniæ are hard and tense, or if they contain omentum they feel doughy. Although the hernial tumor contains bowel, there may be dullness on percussion, owing to the small amount of air in the loop of the bowel, the thick walls, and to the fluid in the sac.

The impulse on coughing or straining is an important local feature and is of great diagnostic value; so much so indeed, that experienced surgeons have successfully calculated the nature of the contents of a hernial tumor by a careful estimation of the amount of expansion in the impulse. The impulse is principally due to the additional quantity of intestinal contents which is driven into the knuckle of gut by the act of coughing or straining. Of course it is very apparent that the amount and character of the impulse must be *markedly* influenced by the contents of the hernia. Thus in omental hernia, the expansion being due to the increased tension of the sac and to the sudden turgescence of the omental vessels, the impulse would naturally be relatively less in omental than in intestinal hernia. When strangulation occurs the contents of the sac are shut off from the abdomen and nothing more can enter; *when the patient is made to cough the impulse is* absent; provided, however, the constriction is situated as high at least as the internal abdominal ring. If the point of strangulation is below this all of that part of the hernia above will contribute toward an impulse. And it sometimes happens that all of the symptoms of strangulation are caused by a small knuckle of bowel being nipped at the extreme lower end of a long sac, thus leaving an excess of unstrangulated bowel. It is not uncommon to find in inguinal herniæ, long sacs extending down into the scrotum, divided into two or three compartments by two or more constricting bands or diaphragms. There is often a condition of free mobility in a strangulated hernia during coughing, especially if it be omental. The movements are, however, more of the nature of abrupt jumps and jerks in an up and down direction rather than expansile in character; that is to say, the tumor when the patient coughs not only rises under the hand but expands in size and is more marked in that part of the tumor lying near the ring. Again, when the strangulation is limited to the neck of the sac, although at the abdominal ring, the im*pulse may be present, provided, of course, the ring* is not also concerned in the constriction. In very old and indurated masses of omentum, which completely fill the sac and block the external ring, even though it be not strangulated the expansile impulse may be absent.

As soon as possible after the diagnosis of strangulation is made it must be relieved, or the patient will surely die. Every moment increases the liability of gangrene in the bowel. The temporizing methods such as the application of heat and cold are applicable in only a very limited number of cases, and in fact they are generally used as aids to taxis. Applications of ice should be made only when the descent is recent, and even then not prolonged. In old persons with weak circulation, and in cases where the strangulation has existed for some time, the application of ice greatly favors gangrene. The application of heat can only be of value when an element of spasm exists and there is an irresistible desire to strain, as sometimes happens in large inguinal hernia.

Our means of reducing the strangulation is by taxis or herniotomy. Taxis is better adapted to inguinal than to femoral hernia, and to acquired than to congenital.

The patient should be etherized, and placed upon his back with his hips elevated and the thighs adducted and flexed upon the abdomen. The lower or external pillar of the ring blends with Poupart's ligament, to which is attached the fascia lata of the thigh, so that the position of the thigh affects the ring much. Thus extension and adduction of the thigh stretches the pillars and closes the ring, whereas flexion and adduction relaxes the pillars and opens the ring, relieves constriction and favors the return of the herniated viscera. Everything being ready the hands are thoroughly warmed, and while one hand firmly supports the neck of the hernia the other grasps the tumor and gently squeezes it, at the same time kneading it with a view of reducing its bulk. In manipulating the hernia great care must be used in making the pressure so that the whole surface of the finger pads and fingers are applied evenly, and the movements executed in a gentle, firm and regular manner. Avoid all forcible, unsteady and spasmodic manipulations; and above all avoid punching the finger tips into the parts, as they are admirably adapted for causing an unnecessary amount of bruising and possibly laceration of the gut. In inguinal hernia a slight downward pull is usually made to straighten it out and the pressure is directed upward and outward. In femoral hernia the pressure is made at first downward to bring it opposite the saphenous opening, and then backward and upward. Generally the gut slips in with a sudden gurgle which is quite characteristic, or if the omentum, there is a gradual change and a sensation of emptiness of the sac. In either case there is immediate relief of the symptoms. I mean, of course, provided the strangulation is relieved. But it sometimes happens that the sac is separated from its surroundings and pushed bodily into the abdomen, with the contents still unreduced. This is termed reduction *en bloc*, in which case, although the tumor has disappeared the symptoms still persist. A trial of only a few moments is permissible during which manipulation may with safety be persisted in, in cases of apparent strangulation, no matter how gently it is applied. Even where a hernia is not strangulated prolonged manipulation may easily bring it about.

When properly applied taxis may be resorted to with propriety (*a*) in all cases seen very early, and the tension is not extreme; (*b*) in hernial tumors dull on percussion, with omental or fluid contents, if the impulse is present: (*c*) in cases where the symptoms are not urgent and where there has been no previous attempt made at reduction, and where the impulse is present. Taxis is more liable to succeed in inguinal than in femoral hernia, as the constricting tissues in the one are principally muscular, and in the other mainly ligamentous.

There are conditions in which taxis should not be resorted to at all in order to avert disaster. Here we have a loop of bowel distended with gas; rigid with vascular engorgement, constricted by a ring sometimes almost as sharp as a knife and over which the intestine acutely bulges in all directions, its vitality greatly impaired no fresh blood having entered it for hours; and under these circumstances and while in this condition an attempt is made to force it through the constriction. Can you imagine anything more unsurgical than this? Under these circumstances the bowel can be bruised or lacerated with the greatest ease. In fact, unless extreme gentleness and care are used some bruising will occur in the most favorable cases. In far-advanced cases laceration may occur at the seat of stricture. Owing to the pressure exerted by the constricting band the bowel may already be partially eaten through by ulceration from within, or possibly it may be gangrenous at that point. Then very little force would be needed to complete the perforation. In other casess when the constricted part is not weakened by pathological changes instances are reported in which the gut was ruptured during taxis. In these cases the rent was not at the point of constriction, but on the distended portion of the bowel where the bulging was most prominent. In old irreducible hernia thee sometimes exist adhesions between the bowel and sac. If the adhesions themselves give way no harm follows; but they may be so strong and unyielding as to tear away some of the intestinal peritoneum in which event a partial laceration of the gut results, and is a serious accident if at all extensive. Another accident of taxis to which I have already referred, is the reduction *en massé* of the sac together with its contents, the strangulation being unreduced. This has happened on slight manipulation, and most often occurs in recent herniæ, in which the sac is not adherent. Rupture of the sac may occur, the bowel protruding through the rent into the submucous tissue.

Even after the hernia has been reduced by taxis serious results may follow. If the intestine is inflamed at the time of the reduction; or, if owing to its long strangulation its vitality becomes so lowered as to allow its walls to be invaded by infective irritants, sloughing, perforation and peritonitis follows. A patient whose nutrition is bad may do well for three or four days, when, suddenly a small gangrenous patch separates and the patient sinks into a state of collapse and dies from shock.

Should taxis fail to return the hernia unstrangulated to the abdominal cavity we must proceed at once to the performance of herniotomy. I would earnestly recommend that arrangements be made before the patient is etherized to proceed without delay to the operation should taxis fail.

I will now report two cases upon which I have operated recently.

*Case 1.*—O. G., age 28, laborer. Has been ruptured for ten years. The tumor was not large and could always be easily reduced. Never wore a truss. About the middle of the forenoon of March 11, 1893, while lifting a piece of timber in a stooping posture, he suddenly felt something give way in his left side and he sank to the ground. Dr. Baird was called and found a large, painful, irreducible hernial tumor in the left groin extending into the scrotum. He was at once removed to St. Francis hospital where I saw him with Dr. Baird. The patient was vomiting persistently, and the pain was severe. The man, large and robust, was now pale, pinched and anxious looking, pulse rapid and he was in a cold clammy sweat. Collapse seemed imminent, so little time was used in trying to reduce by manipulation, but preparation for operation was at once begun. The patient was etherized, the abdomen was shaved and all the usual antiseptic precautions taken. I was ably assisted by Drs. Baird, Spencer and King. An incision some six inches in length was made directly over the tumor, and the sac exposed and opened. The sac contained considerable dark colored fluid and about two feet of the large bowel, including the sigmoid flexure. The strangulated loop was dark and rigid with congestion. The constricting band which was at the internal ring was cut slightly and an attempt made to return the bowel, trying first at one end of the loop and then at the other, but it could not be returned. I then enlarged the ring to the extent of perhaps half an inch, before I could get the gut back into the abdominal cavity. Although the strangulation had existed for only about four hours its vitality was greatly impaired, especially at one point where the constriction was firm, so that I hesitated somewhat about returning it. I did return it, however, and no bad results followed. I then dissected the sac free from the cord and other tissues and cut it off flush with the internal ring, after ligating it in sections with silkworm gut. The pillars were then sewn together with the same material, and I concluded the operation by doing McBurney's operation for radical cure. His bowels moved spontaneously on the second day and he made a prompt recovery. He is now at work in the woods and wears no truss.

*Case 2.*—I was called April 15, 1893, to see J. McG., age 27. He has had hernia several years. Was operated upon two years ago for strangulated hernia at which time the wound suppurated and he was in the hospital four months. He had worn a truss constantly. On this occasion, however, being somewhat under the influence of liquor he took off his truss. Within an hour his hernia came down and became strangulated. I saw him in the course of an hour and he was vomiting and suffering intense pain. I sent him to the hospital and tried taxis without an anæsthetic. I finally prepared for an operation, and etherized the patient, applied taxis for a few moments but failed. I sterilized and made an incision three inches long directly over the tumor which was on the right groin. The tissues were so much matted together as to hardly be distinguished. After much careful dissection the sac was opened. This structure was much thickened and opaque. The sac contained a small knuckle of bowel and a large piece of omentum, which was much hypertro phied, and adherent to the sac. After relieving the constriction at the ring, the bowel was returned quite readily but the omentum could not be reduced without much handling and bruising. I therefore ligated it off in small sections and cut off a piece as large as my hand, and returned the stump to the abdomen. I then did a McBurney operation for radical cure. The case did well. Had a spontaneous movement of the bowels on the third day. In about a week his temperature went up to 103 and on removing the dressing found a mural abscess in the lower pillar of the ring. This was opened and discharged pus, but closed in a few days and the case finally went on to recovery, the patient leaving the hospital in about six weeks.

There are a few interesting points suggested by these cases. Many surgeons advise to only slightly nick the constricting tissues; but it seems to me better surgery to make the incision free enough to allow the herniated part to be easily returned, than to make a slight cut so that the gut will have to be literally crowded back. For the bowel may be in such a critical condition that even slight handling may greatly lessen the patient's chances for recovery, or even precipitate a fatal result. Then, I think, the omentum is liable to complicate matters very much. If much injured it is liable to inflame and if infected set up a septic peritonitis. It may form adhesions near the ring and guide the bowel to that point, thus greatly favoring a return of the hernia. If it is much hypertrophied and does not return readily it had better be removed and in doing this considerable care is necessary. The omentum should never be tied off in one mass nor even in large sections owing to the liability to hemorrhage? A ligature may sufficiently constrict the tissues as to prevent bleeding at the time but the fat is soon absorbed from under the ligature and it gets loose and allows free hemorrhage. So it is necessary to ligate in small sections and be sure the bleeding is thoroughly stopped before returning to the abdomen. In neither of these cases could an impulse be made out and this influenced me very materially in promptly resorting to herniotomy. In fact, many surgeons contend that when the impulse is absent an attempt should not be made to reduce by manipulation if there exists any other symptoms of strangulation.

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# REPORT OF CASES IN EVIDENCE OF ADVANCED THEORY OF SURGICAL IMPUNITY OF THE PERITONEAL VISCERA.

Read in the Section on Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

BY JOHN E. LINK, M.D.
TERRE HAUTE, IND.

To the members of this Association I feel that I should make some explanation, if not apology, in presenting this work.

I am possibly somewhat differently situated from the most of the prominent workers of the Surgical Section, and therefore from the environment of my location am able to draw some conclusions at variance with the experience of the city and hospital surgeon and teacher.

There are, we may all know, two classes of surgeons radically different in their methods of doing good, the conservative and the bold or daring. And whilst I may have in some remarks before the Section as well as in printed articles seemed to imply that with regard to abdominal work I place myself with the latter, surely I do not wish to so stand. I am decidedly in favor of conservative means in all cases where delay is not hazardous, and surely I agree with Dr. Senn, when he says these cases of abdominal surgery are sometimes attended by the greatest of difficulty; and I emphasize this sentiment, and say none should venture but those thoroughly equipped with the essentials of knack, love of the good to be done and a thorough training incident to clinical teachings and experience. The fad of recording experiences, and the love of dramatic display have too often, I am sorry to say, within my own circle of observation, characterized the laparotomist. Removal of the ovaries for imaginary disease incident to neurotic constitution has been done, to my positive conviction, either through ignorance or viciousness in desire to make display of skill, where, as I have tried to show, no anatomical knowledge nor special surgical skill was required.

Hoping that I will be excused for these preliminary remarks, I will only add with regard to the misunderstanding between myself and Dr. Senn at Detroit, that I regret it, both for the sake of the interest that I entertain for my profession and the hazarding of a personal friendship.

That I am an advocate of cleanly and careful painstaking detail in surgery, when not interfering with an important principle, should stand without the saying. That Dr. Senn has done a grand work in this particular line is established, and I only wish to add my mite to the mountain rather than in any particular to tear it down.

What I expect or desire to accomplish in the experiments that I shall report, is to show that instead of the fine details of cleanliness, catgut, silkworm gut, kangaroo tendon ligature, Lembert stitch and all that, being an essential feature of success, there is a tolerance of tissue here that not only invites the skill of the surgeon but demands the surgical attention of the doctor, when traumatized; and that any and all lines of progress however desirable in improved technic are of far less importance than that of promptness in this emergency work, not only in cases of penetrating wounds which I hold stand first, but in many others: appendicitis not being less than second in importance, whether, with perforation and general diffusion throughout the peritoneal cavity, or threatening. I believe that all cases of uncomplicated perforation of the bowel, barring accident, can be saved.

I am not here to present complications in idiopathic nor traumatic cases. I leave that to Dr. Senn and his *confrères*. I am only here to prove peritoneal tolerance to *outside entrance*—that there are no organized enemies lurking in the normal atmosphere. They are only, or in the most part, in old hospital wards and we country doctors have only to keep our patients away from them, and "aseptic surgery" so-called need not distract a moment of our time and attention, so greatly needed in these penetrating wounds, appendicitis, intussusception and obstruction of the lumen of the alimentary canal.

Antiseptic surgery got the credit at one time of making abdominal surgery practically safe. We are all, I think, now aware of the fact that the means so employed hazarded the life of the patient; but it has left a nucleus of thought in riddance of a pathological fallacy and popular superstition; and stands to abdominal surgery at least in about the same light, in virtue, that Hahnemannism does to scientific medicine.

My operations were all made in an old uncleaned barn or stable, several of them on the floor littered with decaying animal and vegetable matter; the others on an improvised table constructed of old boards picked up from the floor. Dogs unwashed and hands soiled,—no water, soap or other disinfectant was used in any sense. Patient usually confined successively in a close kennel three by four feet with open or slat floor about a foot from the ground; kennels never washed or disinfected.

They were all so treated with the exception of two left in a bin in barn on account of cold weather. These both escaped, with bad results as reported, by jumping over a tight board partition about five feet high.

The number of cases is limited owing to the place of operation having to be torn down to give right of way for a railroad sidetrack, and just at a time when I was in the midst of my work. I was forced to discontinue during the cold weather of winter, owing to the above cause, and I was also unable to make any operations between April 28 and May 28.

I try to show nature's process of repair as well as tolerancy of tissue, and therefore have preserved the lives of some of the dogs for considerable length of time. In two instances I have made a second operation on the same dog at a considerable interval of time between.

*Case 1.—Dog No. 1.* Laparotomy on female dog, weight thirty-four pounds, May 31, 1892. Cut the ileum three-fourths across; sewed with darning needle armed with lapping yarn two ply; three interrupted sutures. Cut again within an inch and a half of the first incision. This cut Dr. L. J. Willien of Terre Haute, closed with aseptic catgut suture. interrupted Lembert stitch; cut again at about three inches from the latter, and closed with braided surgeon's silk in a large armed needle, taking three stitches, interrupted, and reënforced between each with black cotton, ordinary sewing thread and small cambric needle. Closed the abdominal walls with three deep stitches, including skin muscles and peritoneal coat in each stitch, using black braided surgeon's silk and large curved needle.

I placed the bitch in close confinement; gave water only, for two days; then milk until the fifth day, when I gave her well-cooked beefsteak, which she took with relish; killed her the fifth day of June. Post-mortem revealed no peritonitis whatever. The two wounds which were closed with coarse sutures were patched with omentum; the one with surgeon's silk I exposed by tearing away the omental patch and found sutures still in place, but loosening by slough in the direction of the mucous membrane. The wound closed with catgut Lembert stitch had healed by first intention; specimen preserved and presented before the Surgical Section American Medical Association at Detroit.

*Case 2.—Dog No. 2.* Weight of dog twelve pounds; female. Operation done August 23, 1892. Opened the cavity and with fore-finger caught up and drew out a loop of the ileum covered with omentum; cut through omental covering and incised the bowel transversely to about two-thirds its circumference; sewed with sutures of lapping yarn in darning needle as in Case 1. Confined the dog, and gave only water for three days, then milk until the sixth day when I fed stewed chicken. By mistake the dog got the end of a chicken bone and gulped it without crushing. From this time on I fed meat freely. The dog evinced no suffering.

I presented this case to the Vigo County Medical Society, Thursday Sept. 12, 1892, the tenth day after operation. The abdominal wound was perfectly closed, apparently by first intention. I had removed the sutures on the fifth day. There was little or no evidence of suppuration. The dog was chloroformed and the abdomen re-opened.

There was no evidence of general peritonitis. On close examination a convulvulus of the ileum was found and the bowel adherent to the mesentery which in this case seems to have formed the medium of covering in healing. Dog killed and specimen marked No. 2 preserved with a specimen of stitches as used, made post-mortem. Later, the end of thigh bone of chicken is found lodged at cicatricial convulvulus, where it remains to be seen, somewhat impacted, but no impaction of bowel contents above.

*Case 3.—Dog No. 3.* Black dog, male; weight, thirty-five pounds, operation done October 11, assisted by Dr. B. A. Watson of Jersey City, N. J., author of "Amputations and Complications," dedicated to Lister, also author of "Pyemia and Septicemia," Pepper's Practice, etc.

With hands black from handling dog fresh from dirty kennel, all unwashed, I made an incision of about two inches in length. Drew out the omentum in considerable quantity until I exposed the ileum which I caught up and withdrew until several inches was exposed. I cut well across to the mesenteric attachment, and then sewed with darning needle armed with three ply cotton wrapping cord making three interrupted sutures, tied in heavy knot and cut at about an eighth of an inch in length. Bowels and omentum were replaced without cleansing and the parietal wound closed with three deep stitches, surgeon's silk. Dog confined in same kennel as the other two, was very impatient of restraint, yelping most constantly day and night. Was watered and fed as the others. On the seventh day placed him in the barn with other dogs.

Though the parietal wound was open and gaping, the opening was well closed at the bottom, the peritoneal coat having closed by adhesion. Dog's life preserved for other experimental purposes.

*Case No. 4.—Dog No. 4.* Weight of dog sixty pounds. Operation October 22, 1892, assisted by Dr. Shaley of Terre Haute and Dr. Brunker of Riley. A small opening was made in the median line; the omentum drawn out and a loop of ileum exposed .and cut across; three interrupted sutures with darning needle and three ply cotton yarn was used.

This operation was attended by much embarrassment in stitching up the parietal wound, returning the viscera, etc., owing to imperfect etherization; and the fact that the operation was done on the barn floor littered with chaff, straw and general debris which was constantly getting mixed up with the bowels and omentum. The dog had been *fed* freely a short time before and vomited copiously confined to a chain on barn floor. By October 27th, the dog was apparently well, wound nearly healed. Dog preserved until March 1st, when in an effort to etherize, he died.

Specimen preserved and labeled No. 4. The specimen shows the alimentary tract perfectly normal, and only a thread of omentum left clinging to the point of injury, absorption evidently having cleared up the scaffolding of support—nature's workmanship displayed.

*Case 5.*—Operation same as No. 4. Operation done Oct. 22, 1892. Oct. 23d dog running at large in stable, having escaped over five foot board partition; 25th, dog quite out of sorts, external wound gaping; 26th, more cheerful, on his feet but I feed nothing; 27th, seems much improved and eats some soft, well cooked meat; swallowed a short piece of bone—mutton rib—two or three inches long; confined again but escaped during the night by jumping and is found dead in the stable the next morning. Post-mortem examination reveals a large clot of blood, at least eight ounces; no fecal extravasation or bowel perforation. There is a large mass of omentum and bowel agglutinate with lumph, no general peritonitis. Dog evidently died from hemorrhage and shock, incident to injury received in escaping from confinement. Specimen preserved and marked No. 5.

*Case 6.*—Operation done Oct. 22, 1893, same as Nos. 4 and 5; small black dog; weight six pounds. Oct. 23d, dog escaped from confinement and is nowhere to be found; Oct. 27th, dog found under barn floor, omentum protruding in a mass as large as a hulled walnut; 28th. dog is in good condition as above; fed some well cooked meat; put a ligature around the tumor with intention of strangulating and removing. Nov. 11th tumor still there and somewhat enlarged. With the assistance of Dr. Glover of Terre Haute, I etherize and cut around the tumor, through into the peritoneal cavity and remove leaving a large gaping wound. We decided to kill the dog and make post-mortem examination of the bowel wound. There is a slight adhesion of the bowel—ileum—to the parietal walls in the lumbar region, left side. In order to preserve it as we find it the muscle is in part removed with the viscus. The cut in the bowel seems to have been patched by adhesions to the mesentery. The bowel is cut first across near where the injury appears, and then slit longitudinally so as to expose the inner surface of the bowel. The sutures are found still clinging by the merest hold to the mucous membrane covered with a mass of calcareous concretion; the inner membrane of the bowel is rough and slightly thickened; lumen of the bowel apparently increased from relapsed condition of coats of bowel, which are well reënforced by patch on the peritoneal aspect. See specimen No. 6.

*Case 7.*—Female dog. Dies under the influence of the anæsthetic commercial ether.

*Case 8.*—Small dog. Operation done April 11, 1893, under anæsthesia, Squibbs ether. An incision about two inches long was made below the umbilicus; the omentum pulled out and a loop of the bowel secured and cut entirely across; incision made with scissors, the cut extending into the mesentery. I sewed up the wound with cambric needle armed with flax thread; continued suture beginning at mesenteric line extending around until I reach the point of commencing when I tie the two ends of the thread, exercising some care not to draw too tightly—the danger being that the sutures thus applied if drawn upon will act as a drawstring puckering and thus contracting the lumen of the bowel. The bowel and omentum are now returned and the parietal wound is closed with curved surgeon's needle armed with flax thread, two deep interrupted sutures being used. Dog confined and treated as the others before described, until the eighth day when he is fed cooked meat and given his liberty in the barn with other dogs. April 19th, dog killed and post-mortem examination made; find a large mass formed of lymph and mesentery about one and a half inches in diameter to which the mesenteric aspect of the wounded bowel is adherent. The outer side of the wounded bowel is patched with adherent omentum. There is no diffused or general peritonitis. The viscera are all in healthy condition notwithstanding as I should have before stated the dog had fallen the night before through a hole in the floor of the loft to the stable floor below, a distance of nine feet. There is an acute curve of the bowel as it is found imbedded in the above described tumor. The lumen is normal—no stenosis nor dilation perceptible. Made no effort to examine condition of sutures. The parietal structures are preserved so as to show the bad condition of outer wound and the perfect healing of the peritoneal aspect with mesentery attached. Specimen preserved marked No. 8.

*Case 9.*—Small dog, male; operation done April 3, 1893, assisted by Dr. Mason of Terre Haute; anæsthetized with commercial ether; opened abdomen with rusty scalpel; caught up a loop of small intestines; cut out a segment about two and a half inches in length; tied the whole of intervening mesentery with a fillet of silk thread carried around with a curved surgeon's needle; sewed the two, distal and proximal, ends of the cut bowel together, using darning needle with heavy lapping yarn; first stitch at the point of mesenteric attachment, the next at the opposite curvature and then once at midway between these on both sides, and for additional security against possible leakage I put an interrupted suture of small cotton thread with cambric needle between these. All sutures are interrupted. The intervening segment of bowel is now removed by cutting the mesentery at point between the fillet and intestinal line. Owing to some oozing of blood I, for additional security again place another ligature or fillet about the mesenteric fold, this time including about a half inch of that supplying each sewed end of the bowel. We must here depend upon voluntary transplantation of vascular tissue to replace the cut off mesenteric supply. The bowels and mesentery are now returned, with some attendant difficulty owing to small parietal opening; there is in consequence of the squiring process, some leakage of the contents of the bowel between the stitches. The parietal wound is closed by two deep interrupted silk sutures. Dog treated much as the others described. On the tenth day after operation the stitches were removed from parietal wound, which is closed; the dog has been eating heartily for two or three days; has a full healthy discharge from the bowels, normal in size and consistency, which I have preserved, dried for your inspection. Dog's life preserved for purpose of future experiments.

This is same dog as Case 11, operated upon and killed before the Surgical Section; post-mortem examination hurriedly made failed to reveal point of resection of bowel; later assisted by Dr. Marcy of Boston, we found the point of injury and repair; the lumen of the bowel was about normal in caliber and line; there was a thin veil or sheet of omental patch covering the section to the extent of about two inches in length; coats of the bowel nearly normal, excepting the outer, thickened by overlying patch of adherent omental tissue. Specimen along with the segment removed, preserved in bottle marked No. 9.

*Case 10.—Dog No. 9.*—Operation done May 28; cut small hole in ileum and sutured with cambric needle armed with double cotton thread; single suture; dog killed and post-mortem examination made June 6. There is some difficulty experienced in finding point of last cut as well as that of the first reported "case 10," but a careful examination later reveals the bowel covered with very thin sheet of omentum; the bowel is opened by longitudinal incision and the suture as described above is found adherent to the two inner coats of the bowel; mucous membrane slightly thickened for a length of two or more inches. Specimen preserved and marked No. 10.

*Case 11.—Dog No 3.*—Second laparotomy; first Oct. 11; reported "Case No. 3." Operation May 28, 1893; made short incision above old cicatrix; hooked out a loop of, and cut small hole in bowel; closed with one suture, coarse cord and darning needle; closed outer wound with flax thread in curved needle, single suture; killed dog June 4; post-mortem examination shows a small omental band attached to a point of ileum; evidently the patched wound of first operation; the coats of the bowel are thickened by overlying omental patch of about an inch in length; width of omental strip attached to bowel is about half an inch at point of juncture and four or five inches in length; the caliber of the gut at site of operation is a little enlarged.

There is also found a mass of omentum and mesentery agglutinated to the abdominal parietal at point of peritoneal cut, with the ileum firmly attached to this mass. I cut into the bowel longitudinally, and find the coarse suture like a ring lying loose in folds of the mucous coat; I attached it with a thread in order to maintain it where found. Specimen placed in glass bottle marked No. 11.

*Case 12.*—Small black and tan female. Operated May 29th; cut bowel half across; used the same thread for suture that I used in two cases previously, washing the dried blood clot from it in cold water; no disinfectant—not even soap—was used. Closed the wound in bowel with one lapping cord and two flax thread interrupted sutures. Closed the parietal opening with a double flax thread, single interrupted suture; killed the dog June 4th. Post-mortem examination shows outer wound closed with sutures adherent. Parietal surface closed, with mesentery attached; no congestive or inflammatory action perceptible. Gut wound agglutinated to omentum. On exposure by opening the lumen of the bowel there is a ragged condition of the edges of the gut wound revealed; the sutures have disappeared by sloughing. Specimen preserved, marked No. 12.

*Case 13.*—Young shepherd dog, half grown; anæsthetized with chloroform May 30, 1893; cut short opening in parietal walls; hooked out with dirty fingers a loop of ileum; cut small hole through omentum into the bowel; sewed latter with darning needle and cotton cord, same string as used in case 10 and 11, made pliable by simply wetting in cold water. Returned viscera and closed parietal wound with double flax thread single suture, deeply taken through skin and muscle with a lighter hold on peritoneal coat. Dog confined to a short chain on bed of shavings. Treated same as others and killed June 4th. Specimen preserved in salt to June 10th, then in alcohol and glycerine. There is less agglutination of viscera than in any of the other recent cases. The ileum makes a long loop of four inches from a sharp turn to point where the wound is situated and seals itself against the mesentery of the same bowel. On making longitudinal incision through the normal appearing bowel there is found a single suture of coarse cord, the same as described in closing the wound, attached by a slight hold on mucous membrane. The peritoneal line of parietal wound had healed by first intention; the other was gaping and in bad condition. Specimen of gut and parietal wounds preserved marked No. 13.

*Case 14.*—Fox hound; operation done May 31st. Bowel cut half across; three lapping yarn darning needle sutures used in closing; bowel replaced and parietal wound closed with a single interrupted flax thread suture. Dog killed June 4th. Specimen shows a large mass of omental tissue covering the wound. I tear it away sufficiently to show the sutures still *in situ*, but slightly loosened from their original hold on the three coats of the bowel, peritoneal cutting through. Specimen marked No. 14.

*Case 15.—Dog No 9.*—Same individual as Case 9 and 10; June 6th, chloroformed the dog for third experimental operation, in order to show method of operating, before the surgical Section. Dog died under influence of anæsthetic before being brought forward; used dead body to show facility by which the abdomen can be opened without wounding viscera; rusty scalpel is shown; one cut reaches the cavity but opening is too small to admit of the hooking out of the intestines; scalpel is inserted with finger still in the cavity as a guide, when a somewhat *transfixing* cut is made and bowel withdrawn which is cut with scissors and sewed with darning needle and cord, as previously described. The specimen with others as above reported are presented for examination. The specimen with rough sample stitch is preserved with a considerable portion of the normal gut and mesentery; valuable as evidence of non-inflammatory action of peritoneal structures, from operative interference. Marked No. 19.

Dr. Manley of New York—It is unfortunate Dr. Link has so little time. This exhibit, of rough and ready character, is not without interest. Indeed, it is particularly interesting just now, when the heat of discussion has passed over in reference to the treatment of lesions of the peritoneum. The value of Dr. Link's paper seems to me to be in two directions: first, with reference to the fact that the peritoneal cavity, when opened under proper circumstances, is not attended with very great danger; second, with reference to antisepsis or asepsis. I remember very well at Washington, when Dr. Link was present at the International Congress, at the time the antiseptic doctrine was at full height and it was almost treason for one to question its efficacy, and he, like Tait, stood as he stands now. The doctor has shown, as far as the lower animal is concerned, it is immaterial whether we employ antisepsis or asepsis. But; a great many think those operations, which are so easily and readily performed on the dog are the same in the human being, whereas there is scarcely any analogy. We can remove a foot or so of intestine in the dog and the animal scarcely lose a meal, while in the human being we must have a profound regard for that structure. Dr. Link has shown us how lesions, simple in character, can be dealt with quite readily. I think he has accomplished a great deal of good. In the presence of a lesion of the intestine it is not necessary to lay our patient up until a specialist can arrive.

Dr. Connell, Wis.—I think it is now over a year ago that Dr. McKay of this city, concluded to do some work of this character. The superintendent of the poor farm furnished us material, and we got the spayist up there to help us. He, I am quite sure, had not washed his hands for a year. He opened the abdomen with his penknife, and stuck his hands in the cavity. Nevertheless, the animal recovered. Sometime ago I tried a series of experiments with the oblique stitch, and after performing some ten or twelve of these experiments antiseptically I concluded to make an anastomosis, using the same principle. I thought that while I was killing a dog upon which I had operated before, I would practice upon him and prepare myself for an oblique operation I was going to make in a few days. I placed the dog on the table, under the influence of ether, and since I was going to kill him I took no precautions to wash my hands, but tore open the mesentery with my fingers, pulled out the intestine, cut it and drew it together with a piece of hemp thread. After I got through the dog looked so well that I concluded to wait and see whether he would live. Six months afterward I killed him, and tomorrow I will show you the specimen. After I had worked a little while on the anastomosis I determined to unite the duodenum with the gall-bladder, thinking I would at the same time kill the dog. He lived and I killed him a few weeks afterward, and in that case there was no attempt made at antisepsis.

Dr. Geo. McRae, Ga.—It seems to me the discussion is rather unfortunate than fortunate for this Section. It does seem to me, that because we can get good results occasionally by bad surgery, we should never be warranted in doing bad surgery. It is not that we can obtain good results in spite of this surgery, but we should seek measures which will in the largest number of cases accomplish the best results. This kind of negative reasoning would tear down the foundations of medicine. We occasionally get good results by bad operations, but those cases are rather unfortunate for us in that they cause us to be careless in carrying out the methods which will give the best results.

Dr. H. O. Walker of Detroit—The dog experiments are to be regarded as a means to show how to do these operations, but when you attempt to perform the same operation in the human subject it is very different.

Dr. La Place of Philadelphia—In my mind Dr. Link's specimens only mean that the dog is a very good animal to experiment on. If there is any one subject that has brought surgery to the high position it now occupies, it is the knowledge of bacteriology; it is the knowledge that if you keep certain germs out of the soil, suppuration will be absent, which caused the death of nine-tenths of our surgical cases before the days of bacteriology. What do the experiments of Dr. Link lead to? They show simply that as the dog can eat rotten meat and dirt and live on it, so any one can admit dirt into the peritoneal cavity and live, but as we can not eat that food and live, so we can not have the least dirt in the peritoneal cavity and live. Man seems to be the soil best adapted to most germs; his serum is less resistant than that of the lower animals. This is proven by the experiments of the doctor. Therefore, I do not agree with the gentleman, that this would have a bad moral effect on the Section. I hope every one will realize the value of that communication. It does not imply that we should be less careful in the ideal cleanliness. Gentlemen, even at our own table we distinguish the man by the nicety of his cleanliness. Be absolutely cleanly, and then we will have eliminated all the risks. We want to have 100 per cent. of success, if possible, although that perhaps will never be achieved. Try at least to eliminate dirt.

Dr. Hoffman of Philadelphia—It has been my very good and bad fortune to see some very good and bad surgery. I have seen one case where the nurse washed out one of the sponges in a slop bucket, and the patient got well. In another case the operator asked the assistant to insert his finger into the rectum to hold up the tubes, and when the operator turned his back the assistant inserted his finger into the peritoneum, and the patient got well. Another case: The attendant brushed off the table and then, without washing his hands, operated, and the patient got well. However, I do not believe any of us would choose one of those operators to do our work. I do not believe the man who plays with sepsis, antisepsis and asepsis, interconvertibly would go to the man who believes them interconvertible for his surgery. I do not believe chemicals will make any surgery clean.

Dr. Link—I call the gentleman to order. I have said before, and said again to-day, there is no comparison between the peritoneum of the human and of the dog.

Chairman—He is simply showing the tolerance of the peritoneum, giving three cases to illustrate it.

Dr. Hoffman, continuing.—Mr. President and Gentlemen: I think those gentlemen who have left the term antisepsis and gone over to asepsis have done a great deal; I think they have gone to show that sepsis depends on uncleanliness. We do not wish barrels and buckets of chemicals, but simply such measures are as necessary to make us clean. The man who has never done surgery and operates upon an animal by animal methods, will be mistaken if he goes into the operating room and expects the same results by the same methods. Animals are tolerant and intolerant, just as in some, large doses of medicine will produce no effect and in others will cause death. Now, without any disparagement to those gentlemen who try to show that surgery on the animal is the same as on man, except to show what has been done, I will say the man who trusts to animal experiments will carry his animal experiments and dirt along into human surgery, and just as sure as he does his results are sure to be bad. The tendency is to be careless, and carelessness means dirt. Just as soon as watchfulness is gone, just that soon dirt creeps in.

Dr. Mudd, St. Louis—I think the paper presented by Dr. Link has its purpose. I think that perfect cleanliness, which comes with perfect surgery, is the purpose of all our work. It simply shows we have our individual ideals, and each man carries some imperfections. There is no universal ideal at which we will tend, but each of us have an ideal standard toward which he tends. You will find many inconsistencies in the work of to-day. I think this variety in results shown here to-day is good for us, because it gives us food for thought.

Dr. J. B. Roberts, Philadelphia—One point has not been brought out here; that is, although it is admitted the peritoneal cavity or peritoneum is tolerant to many kinds of bacteria, it has been proven to us that we must not apply this reasoning or experiments to other operations in the human body. I think Dr. Link will say he would not apply this kind of surgery to other operations, as amputation of a dog's limb, for the peritoneum is tolerant to some things which cut muscles and other tissues will not stand. It seems to me Dr. Link has shown us a valuable thing in that the surgeon must do the best he can. Many surgeons, it seems to me, are ridiculous in the cumbersomeness of their methods. If we will only remember, what seems to me to be the essence and principle of modern surgery, that some tissue and some animals and some people, at some time and under some circumstances are in such conditions that they are resistant to bacteria while at other times they are not resistant; that sometimes these bacteria will do harm and sometimes they will not, it makes no difference whether you call it antiseptic or aseptic surgery, or clean surgery, or Jones' surgery or Smith's surgery.

Dr. Price, Philadelphia—As to the tolerance of the peritoneum, it matters but little in all intraperitoneal operations what you remove if you do it well and cleanly, but it does matter what you let in. I do not hold, with an enormous experience in peritoneal surgery, that the tolerance is very great. I know a lymph sac is capable of digesting such material as blood, water, etc., so long as there is no dirt in it. There should be less talk about the tolerance of the peritoneum, and less of this experimenting on dumb brutes as well as on human beings. I am satisfied some of our best surgeons observe the best of care in the peritoneum of the dumb brute. It has been my bad fortune to have to do with a large number of post-operative sequelæ of bad surgery, and I usually find it due to irritating solutions and sluggish surgery. Only yesterday I released a uterus with the whole free extremity of the omentum about the cicatrix. I knew before the operation what I had to deal with, because I knew whose hand had been in there. I will close my discussion by saying, this law of cleanliness not only holds good in surgery but it is of paramount value in obstetrics and in everything that approximates surgery. Cleanliness is paramount. I know of nothing so absolutely important as cleanliness in medicine. I have had 1,300 labors without a death from any cause, and it is wholly due to cleanliness.

Dr. J. McFadden Gaston, Ga.—If we will but recollect what has been the recorded results of penetrating wounds of the abdomen, gunshot and knife, in regard to the results in view of operative measures compared with non-operative measures, it will throw some light on the inference to be drawn from this discussion.

Dr. Link—The bad condition of some of these wounds simply shows we must be clean to obtain the best results. Some of the gentlemen have gone from the subject here presented to bacteriological relations and the condemning of my dirty surgery. This I insist is entirely unjustifiable in the light of my opening disclaimer. Dr. Gaston speaks of penetrating wounds, and I would like to ask how many penetrating wounds of this kind have lived without operation. Cases of penetrating wounds, where the bowels are implicated, usually die if not operated upon at once. As I said in Detroit, if a case of this kind came into my hands I would not treat it if I could avoid doing so, for I admit and admitted then Dr. Senn is superior to myself in his technique, appliances, etc. I do believe in this beautiful toilet of surgery if obtainable, but we should not cover up a deep physiological principle with simple technique. I am now speaking to men more competent than I am and who are better teachers than I am, but I say to the general practitioner, if you find a penetrating wound of the intestines, it is your duty to close it up and in the meantime if your discretion suggest, send for the specialist; but do not allow the excretions and dirty contents of the bowel to get into the peritoneal cavity while waiting for the specialist to arrive, but operate at once. There is not one of us who claims to-day that antiseptics cure the patients. And, what do we learn from this? We learn that we do not have to use antiseptics. Just as Hahnemannism taught us that large doses do not always cure our patients, so this shows that cases may recover without antisepsis or asepsis.

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# UNNECESSARY RESTRICTIONS IN SURGERY.

Read in the Section of Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

BY JOHN B. ROBERTS, A.M., M.D.
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While I fully appreciate the need for caution and care in all departments of medicine, I have of late years come to believe that patients are often subjected to restrictions which add to their discomfort, without bringing any commensurate advantage in shortening the time of recovery or guaranteeing the permanency of cure.

The inaccuracy of our former knowledge of the causes of surgical complications and a college teaching, which gives little opportunity for the exercise of individual judgment, have tended to make the timid or inexperienced practitioner follow with blind zeal the dogmatic assertions of writers and teachers of recognized authority.

It is true that it is better to err on the side of caution than to expose a patient to unwarranted risk in a desire to give him greater liberty. On the other hand, the establishment of a nervous dread in the mind of an invalid is one of the chief causes of the habitual semi-invalidism now so prevalent in many walks of life. Physicians are unwittingly the cause of many symptoms which torment neurasthenic humanity.

Surgical affections and operations are so associated with disability in the public mind, that it usually takes but a word to make the patient think himself debarred from the most innocuous liberty.

In order to hear the views of this representative body of working surgeons, I wish to cite a few instances, which seem to me evidences of unnecessary restriction in surgical practice.

Is it not true that patients with fractures of the fibula and tibia are often kept in bed too long and even prevented from carrying on essential business enterprises, because the surgeon fails to recognize the utility of a plaster of Paris dressing? Are not persons with fractures of the bones of the forearm compelled to wear cumbersome splints longer than necessary, and thereby debarred from using the hand for personal needs and for writing?

Tuberculous spondylitis and coxitis are often the cause of many months' confinement in bed in a stuffy chamber; because the surgeon fails to realize that the sunshine and fresh air are urging him to apply a gypsum jacket or a hip splint and send the pallid little patient out into the fields which he himself daily enjoys. I advise no undue hurry in omitting the valuable rest which pertains to recumbency; but it is often maintained too long.

Again, it is not unusual for convalescents of all kinds to be kept in the house, when driving or even walking a short distance in the open air would stimulate appetite and induce sleep better than any tonic or soporific. Immobilization of joints and repaired fractures should not be too long continued. Absorption of inflammatory deposits and pliability of muscular masses are induced by voluntary use and massage. The value of these adjuvants to treatment is diminished by a delayed resort to them. Sprains and chronic joint affections, of certain kinds especially, call for motion and even painful manipulation.

The somewhat fashionable restriction of voluntary movements of the limbs after abdominal operations is, I am sure, usually unnecessary and in many cases adds to the accumulated discomforts attending all surgical procedures. There are, I believe, few operations that demand maintenance of the supine position for a long series of hours. Turning the patient carefully a little to the right or to the left does no harm, as a rule, and makes disease more tolerable.

To deny water to those who have recently been subjected to operation is often a refined cruelty, reminding one of the days when patients, parched with typhoid fever, were not allowed to have the tongue even moistened with cool water. Copious draughts of water may possibly do harm immediately after recovery from anæsthesia because they may induce vomiting. Soon, however, moderate quantities of water may be drunk with impunity and are of advantage in filling up the vessels depleted by any previous bleeding. Do not allow your patients to drink water inordinately, and restrict its use if real evidence is forthcoming of its harmfulness. Mere theory, however, must not be permitted to stand against the well known value of water as an agent which keeps skin, kidneys and bowels active, reduces temperature, and plays a physiological role in reëstablishing the equilibrium of a circulation disturbed by bleeding and surgical shock.

It seems to me that we are coming now to a more scientific understanding concerning the proper regulation of diet in surgery. Much restriction formerly advocated because of the almost invariable occurrence of surgical fever, is now recognized as unnecessary.

We know that pyemia, septicemia, sapremia and kindred complications are due usually to what the surgeon puts into, or allows to remain in, the wound rather than to what the patient puts into his own stomach. Surgical textbooks of recent publication, however, are not altogether guiltless of teaching an erroneous causation for post-operative complications. Errors in diet may cause fever and other undesirable symptoms, but their power for evil should not be overestimated. After many capital operations, the patient may return to an ordinary diet on the third or fourth day.

I am often surprised to see a great amount of cotton and a splint used as a dressing for a comparatively insignificant wound of a hand or arm. A few pieces of gauze, but little larger than the wound, saturated with collodion is all that is really needed in many such cases. Great bundles of dressing restrict harmless motion, often make the patient sensitive about mingling with his acquaintances, and are nearly always unnecessary and almost unjustifiable.

In conjunctivitis, iritis, keratitis and wounds of the eyeball it is seldom necessary to keep the patient in the house. A pair of dark glasses to exclude glaring sunshine or the sealing of the inflamed or injured eye with plaster is usually the only restriction needed, except that reading with either eye is to be avoided. Imprisonment in a darkened room is almost never required.

Routine restrictions belong to the methods of those who allow others to do their thinking, and who attempt to practice surgery by "following the leader," as do children in a game.

Dr. Griffith, Kansas City—I do not think that any one at present would put a fractured tibia and fibula in a plaster cast and keep the patient on his back for six weeks. I understand that in many cases of tubercular spine, plaster-of-paris will not do and is not the accepted treatment; that the supine position with or without extension on a parallelogram, especially when the vertebræ of the cervical region is involved, is the only treatment. I have had a case of this kind in my own family, and if I had it to go over again this would be my treatment, as it is the advanced method and gives better results than a cast or jury mast. No one thinks a moment of keeping little ones indoors all the time, and in compound fractures or resection of the elbow, wrist or shoulder joints, no one thinks now of keeping them in bed or confined to a room.

Dr. McLean, Detroit—The paper of Dr. Roberts struck me as containing a great deal of common sense. Some of us remember what a strict regimen used to be observed about twenty-five years ago after operations. I believe much of it to be unnecessary, or even injurious. I recently performed an amputation of the shoulder, and on the twelfth day after the wound was entirely healed, the patient walking about in perfect health, and I exhibited him on that day before our local society. In another case I performed an amputation at the hip joint, and on the fourteenth day I exhibited him also, walking on crutches and in perfect health. In both of these cases the restrictions as to diet and confinement were much simpler than is the usual practice to-day. I have come to believe that in fractures of the thigh no extension at all is necessary in many cases. To lay down as an orthodox law that in every case extension is necessary is not right. We have too many fixed rules.

Dr. Thomas, Pennsylvania—I believe there are certain points to be considered. Sometimes surgeons are brought into court charged with malpractice in the treatment of a fracture. If the splint has been taken off sooner than the books say, the attorney for the plaintiff has a case. There was an instance of this kind in our city a short time ago, where a surgeon was mulcted $5,000 for having let the patient out three weeks after a fracture of the tibia and fibula. If he had been orthodox in his proceedings this unfortunate result would have been avoided. I don't think splints are taken off much too soon, and in justice to ourselves we should not take them off too soon.

Dr. Marcy, Boston—A common practice among surgeons on both continents to-day is the elaborate preparatory treatment, which has great disadvantages, in that it keeps the patient in suspense for several days before the operation. Another practice among many is that of getting at a result by several stages. I am in the habit of doing three or four or even more operations at one sitting, which it is customary to do in as many sittings, and I think with great advantage to the patient. I also want to speak of the employment of collodion dressings where no drainage is necessary—to recommend it.

Dr. Roberts—In closing the discussion, I will say my object has been to emphasize the fact that no surgical injury, process or disease should be treated in a routine manner.

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# TUMORS OF THE NECK.

Read before the Section of Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

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No region of the body is so prolific in neoplasms as the neck.

No region of the body is so important from an anatomical and surgical standpoint, containing as it does many great vessels and nerves, the integrity of which is essential to life. Therefore, the diagnosis and treatment of morbid growths in this situation is of commanding interest.

Never passed the time since surgery has been practiced as an art, that its followers everywhere have not approached operations upon the neck with the greatest caution, if not trepidation.

While a proper amount of anxiety should attend all operations in so vital a spot, I shall endeavor to show that the danger incurred in the removal of tumors from the neck, varies as widely as the many neoplasms differ histologically.

Tumors superficial to the deep cervical fascia are comparatively easy of diagnosis and safely operable, presenting no greater danger than similar growths in other regions of the body.

The only vessel of importance is the external jugular vein and this can usually be avoided as it is a prominent landmark in the neck. The danger from cutting it is not great. I have twice wounded it myself and have seen others do so, without trouble. Tumors originating beneath the deep cervical fascia, on the other hand, present the greatest difficulties in their diagnosis and removal.

Tumors of the neck are common at all ages. They are congenital and acquired, cystic and solid, benign and malignant. This region is preëminently the site of congenital cysts and I know of no other which compares to it in this respect. Many tumors which are usually thought to be acquired are congenital, being held down by the deep fascia and prevented from appearing externally. A congenital cyst may not form a distinct and well outlined tumor until adolescence or middle age. This knowledge is of great value in diagnosis and treatment.

Cysts as they occur in the neck embrace almost every known variety:

1st. The simple, serous or unilocular cyst is frequently met with in the subclavian triangle and may pass downwards under the clavicle into the axilla or chest. They contain as a rule a colorless, limpid fluid and are usually called "hydroceles of the neck."

The cyst is congenital or acquired and may be above or beneath the deep cervical fascia. It is usually translucent and covered by smooth, thin skin of natural color. The aspirator would settle the diagnosis in any doubtful case. These cysts are supposed to grow from the branchial clefts and have been accurately described by Maunoir, Phillips and others.

*Treatment.*—When practicable they should be excised. When deeply attached, it will be better to excise a portion of the cyst wall, drain freely and plug with iodoform gauze. The old treatment of tapping and injecting with iodine, carbolic acid., etc., is uncertain and dangerous. Setons are more so. Spontaneous recovery has followed accidental rupture.

2nd. The second variety of cyst encountered in the neck is the compound or multilocular—the cystic hygroma of some authors, the lymphan geioma cysticum of others. It is generally congenital and develops from the lymphatic vessels. It is most obnoxious to the carotid triangles. The different compartments of these cysts vary in size from a small shot to an orange. Their contents vary as widely as their size. Every sort of fluid, semi-solid and solid materials may be found in them. They are usually situated beneath the deep fascia, but, may perforate it and present superficially.

They are attached to everything—vertebræ, muscles, vessels and nerves, which makes their removal always a serious matter, often an utter impossibility. No other treatment, however, is at all satisfactory, and most authors recommend excision with all its primary and secondary dangers. The internal jugular vein, carotid artery and pneumogastric nerve have been excised in removing these growths, the patients in some instances making excellent recoveries. They are recognized by their tuberculated outline, fluctuation, and preference for the carotid triangles.

3d. The bloody cyst or hematocele may be met with in the neck. Sometimes they are hydroceles into which a vessel has ruptured. There is, however, a true bloody cyst intimately connected with the great vessels. Their contents resemble blood, and it is said that they are cyst-like dilatations of the internal jugular vein. They may or may not communicate with the interior of the vessel. Subsidence of swelling upon gentle pressure would be an evidence of such communication, and a useful hint as to treatment as well.

4th. Sebaceous cysts are frequently met with in the neck. They are superficial and deep, usually the latter, as pointed out by von Langenbeck, differing in this respect from similar cysts in other parts of the body. Superficial sebaceous cysts are likely to occur in the thyro-hyoid region and are easily enucleated. They may attain the size of an orange. Deep epidermic cysts are according to Gross, invariably situated in the superior carotid triangles—usually the left. They are frequently connected with the sheath of the vessels, and when the head is in certain positions pulsate synchronously with the heart. They give a pulpy fluctuation which is best elicited by putting one finger in the mouth, the other over the tumor. Von Langenbeck advises extirpation with all of its risks and hazards.

5th. Bursal cysts developed from the two normal bursæ situated along the middle line of the neck are infrequently found. The upper bursa is found between the hyoid bone and thyroid cartilage; the lower and larger one between the thyroid cartilage and skin. These tumors are diagnosticated by their situation, viscid contents and obedience to the movements of the larynx. They are rarely so large as a walnut.

6th. Hydatid cysts have in rare instances been found in the neck. Erichsen reports two cases. One removed from the subclavian triangle of a woman upon whom he had previously operated for hydatids of the liver.

7th. Along with cysts may be mentioned the air cyst or goitre aèrien. It is caused by hernia of the mucous membrane of larynx or trachea through their cartilages or rings respectively. They disappear upon pressure, vary with respiration and enlarge after exertion. It is a rare affection and occurs in those who use the voice constantly, as the auctioneer or public crier.

8th. Thyroid cysts are less common in America than in the mountainous regions of Europe and India. They are particularly common in the Alps and Himalayas. I have seen many well marked thyroid cysts in Kentucky. These cysts which are usually multiple, generally affect the lobes of the thyroid glands rarely the isthmus. The right lobe more commonly suffers, which will place these tumors in the right inferior carotid triangle. The cysts vary in size from a pea to a fist and contain different kinds of fluid—rather viscid, bloody with an abundance of cholesterine.

They obey the movements of the larynx. Women suffer more frequently than men. The trachea may be pushed well to the opposite side.

*Treatment.*—If the disease is limited to either lobe, the proper treatment is by excision. Prof. Kocher of Berne, who has lived for years in a goitrous district and has excised the thyroid gland in whole or in part far in excess of other surgeons, is emphatic in his approval of partial thyroidectomy, but condemns removal of the entire gland.

Myxœdema follows the latter operation in nearly every instance. He followed his cases carefully and in only two out of eighteen complete thyroidectomies were the symptoms of myxœdema wanting. In both of these the bronchocele returned, and it is fair to assume that he did not remove the entire gland. Of twenty-eight partial thyroidectomies the general health of the patients did not suffer any. The experience of other surgeons has been not unlike Kocher's, and few if any advise total extirpation of the gland. If a portion of it is left the distressing and fatal symptoms of myxœdema do not occur.

Where excision is not practicable, incision and drainage should be followed. Tapping and injections while curative in some instances are on the whole more dangerous and less certain than incision.

The other enlargements of the thyroid gland may as well be disposed of now. Benign tumors do not affect the thyroid, and the only innocent affection of a solid nature to which it is liable is the fibrous bronchocele. It is simply an hypertrophy of the normal glandular and connective tissue. It may affect the entire gland, but, like cystic disease in this situation, is most obnoxious to its lobes, especially the right. The isthmus rarely suffers alone. Circumscribed hypertrophic conditions of this gland are by some called adenomata. Enlargements of this body in goitrous districts are frequently associated with cretinism.

Per contra, idiocy, so far as I am advised by the superintendent of the feeble minded institutions of this and other States, does not predispose to enlargement of the thyroid.

*Malignant disease—carcinoma and sarcoma* rarely affects the thyroid. Cancer is by far the more common affection and may exist as encephaloid or scirrhus. It appears late in life.

*Treatment.*—Nothing can be done for malignant disease. The only hope would be in complete removal of the gland and this is certain to be followed by myxœdema.

The solid bronchocele should be excised under the same rules governing operations for cystic disease.

In very exceptional instances there may be accessory thyroids in the neck—within the larynx, trachea, etc., and they give rise to the same enlargements peculiar to the normal gland. Benign solid neoplasms are found in all parts of the neck. The most usual growths are lymphoma, enchondoma, fibroma and lipoma. There is besides a local hypertrophic condition of the skin which at times is so distinct as to give the appearance of a tumor. The vessels in the affected area are much enlarged. This is really a naevoid condition.

Lymphomata are the most common of benign growths. They will generally be found in the submaxillary, occipital and subclavian triangles. One gland is as a rule affected. Enchondoma is practically limited to the submaxillary triangle where it affects the submaxillary salivary gland. I have never seen it in any other region of the neck.

Fibromas are not specially common, and when they do occur, do so indifferently. No region is specially liable to them.

Lipoma or fatty tumor while not frequent is sufficiently common in the neck. They are very generally superficial to the deep fascia, and when so are easy of removal, whatever their size. My belief is that they are more commonly situated in the inferior carotid triangle than other parts of the neck. They may attain an enormous size as shown by the photographs which I pass around, kindly sent me by my friend Dr. Samuel Swope, of Marion, Ky. Each had grown from twenty to twenty-five years.

*Sterno Mastoid Muscle.*—There is a circumscribed swelling of the sterno mastoid muscle, which is at times so pronounced as to give decidedly the appearance of a neoplasm.

Bryant and Holmes, who have specially investigated the subject, speak of it as if it were peculiar to the newborn infant and due to some injury (they are more common in breech presentations) during parturition. It unquestionably occurs in adults. I have seen two well marked examples of this affection.

Three years ago a farmer about 55 years of age, living in Indiana, presented himself at the surgical clinic of the university with a well marked circumscribed swelling in the right mastoid muscle. No history of syphilis or trauma. The muscle could be lifted up sufficiently to clear up any doubt as to diagnosis. This man was given iodide of potassium, blistered locally, and was practically well within a fortnight.

*Malignant Tumors.*—Malignant disease of the neck may show itself in at least three different varieties. There are sarcomas, carcinomas, and the local enlargements incident to Hodgkins' disease—or as we prefer to call it, lymphadenoma. Sarcomas are more frequent than carcinomas.

Cancer never begins in the lymphatic gland primarily, and sarcoma does so but rarely.

Both sarcoma and cancer are in my judgment usually found after forty, and are likely to be situated in the occipital or submaxillary triangles. Sarcomas give a most deceptive sense of fluctuation when well advanced. The skin is discolored a deep red or violaceous hue and in time ulcerates. Hemorrhages take place from time to time and aid in hastening the end. Sarcoma attain an enormous bulk.

*Treatment.*—Unless seen and diagnosticated early, these cases are in my judgment not operable. No operation for malignant disease promises success unless considerable tissue can be sacrificed. This can not be done in the neck.

These growths are always more adherent than they seem to be, are exceedingly vascular, often accompanied by enlarged glands which renders their complete removal a matter of impossibility. The primary and secondary dangers are so great from operations for the removal of these growths that the wise surgeon will, as a rule, decline to interfere, for at best he has little prospect of doing substantial good

Lymphadenoma affects the lymphatic glands of the neck early in the disease. The diagnosis of this affection can only be confounded with tubercular adenitis; as a rule, no trouble should be experienced in differentiating between them.

Tubercular glands always begin in the submaxillary triangle, whereas, in lymphadenoma the enlarged glands are first seen in the carotid and subclavian triangles. Tubercular glands are as a rule, small and unilateral—in lymphadenoma larger and bilateral.

Tubercular glands often break down—lymphadenomata rarely do so. Above all, tubercular glands are most common between ten and thirty years of age; lymphadenoma occurs at any age and *men* are more liable to it than women.

Tubercular adenitis runs a chronic course; lymphadenoma an acute one. Surgery promises but little in lymphadenoma.

*Tubercular Glands.*—No paper upon tumors of the neck would be complete without a description of the most common of all swellings in this region—tubercular lymphatic glands.

While these growths are inflammatory and not neoplastic in origin, still their history and operative treatment so closely resemble neoplasms that clinically we treat them as such. They are most common between ten and thirty years of age. The African and mulatto are very liable to them. They are unquestionably due to the tubercle bacillus which gains entrance through a lesion of the skin, mucous membrane, socket of carious teeth, etc., and is then carried by the lymph vessels to the nearest lymphatic gland and deposited in its interior. The first glands affected are almost invariably the submaxillary. At first a single gland is enlarged, later on when it is no longer able to filter out all of the tubercle bacilli they pass to the neighboring gland, and so on possibly until the entire chain in this region, superficial and deep, become implicated in the tubercular process. So that we have first the submaxillary glands enlarged, next the occipital, lastly the subclavian. These all belong to the superficial chain.

The deep lymphatic glands are situated immediately beneath the sterno mastoid muscle from its origin to its insertion. These, in part or in whole, sooner or later join in the tubercular inflammation.

In the advanced stage of this affection every gland on one or both sides of the neck may be enlarged. It may run an acute, subacute or chronic course. Death may follow from miliary tuberculosis within a few months, or the disease may remain localized in a single gland for many years. The lymphatic glands are truly the "watch dogs of the system," and it depends upon how well they do their work what is to be the fate of the individual; as long as infection of other tissues, especially the lungs, is prevented, the disease runs a safe course. The capsule of the gland aids materially in localizing the germs and spores and preventing infection of the surrounding paraglandular tissue.

Separate for a time, tubercular glands usually fuse together, moving as a whole, the outlines of each, however, being usually distinct.

The first infected are the largest, possibly attaining the size of a walnut, while those involved late in the process are no larger than a pea. Tubercular glands may become caseous or break down; those first affected are most likely to do so, but they do not suppurate in a literal sense. The fluid or so-called pus is sterile.

Sometimes an acute process is engrafted upon the chronic; the glands becoming affected secondarily by the ordinary pyogenic organisms. Then true suppuration occurs and the glandular tissue and tubercle bacilli are destroyed by the acute process which ends in abscess and drainage — a fortunate ending when only one or two glands are involved. Acute suppuration taking place in a large number of glands could only hasten death.

*Treatment.*—If modern bacteriology and pathology go for anything, we should not be in doubt as to the treatment of tubercular glands in the neck or elsewhere. Exposure of the diseased parts by a free incision, so that each gland can be seen, felt and completely extirpated, along with its capsule, constitute the ideal treatment. When it is practicable Professor Senn advises—and I think wisely—that the entire chain of diseased glands should be removed en masse. An incision from the mastoid process to the angle of the lower jaw and thence along its lower border, would give free access to the glands usually enlarged. Senn removes the submaxillary salivary gland if it is at all suspicious, also the lower portion of the parotid. The occipital and subclavian glands are easily reached and enucleated.

If the deep chain of glands situate beneath the mastoid muscle are to be removed, one or two plans are open to the operator. An incision along the anterior or posterior edge of the mastoid may be made in order to gain access to the diseased glands. The fact that the carotid artery and internal jugular vein have been injured in so many cases is sufficient evidence to me that these incisions do not sufficiently expose the parts, and the surgeon depends entirely upon the sense of touch.

Billroth cut the jugular vein sixteen times in 128 operations.

So that the operator shall see and feel every enlarged gland, the sterno mastoid should be cut across about its center, and each end reflected back. Afterwards, the muscle should be sutured with over-prepared catgut or iron dyed silk. The head should be held in one position to facilitate union of the ends of the muscle.

The results of Billroth, Fraenkel, Schnell and others who have done many operations for tubercular glands, are quite as encouraging as an optimist would expect. About 25 per cent. of the cases operated upon suffer relapses and require a second or third operation.

When we remember that enlarged tubercular glands threaten life as long as they remain in the body, each being a focus for subsequent infection, and that in at least one case out of every eight miliary tuberculosis of the lungs follows, who can doubt what his duty is when a case of this kind comes to him for advice?

DR. MACLEAN of Detroit—The author discountenanced tapping and injecting the so-called hydrocele of the neck; for myself I will say that I have tapped and injected with iodin in a large number of such cases a great many times and I have never had occasion to regret it. I have never known of a failure.

With cystic goitres it is another matter; I occasionally get good results—not always. Sometimes the patient will allow tapping and injection when he will allow nothing else.

I have accidentally cut the jugular vein a good many times and never had any bad results; there is no great danger attached to the accident. There are many questions connected with this subject that are valuable, but I will merely say that I am personally grateful to the author for the manner in which he has dealt with it.

DR. MUDD of St. Louis—I think the reader's classification of tumors of the neck a valuable and helpful one. The diagnosis of the individual case is often a difficult matter.

I don't regard the division of the jugular as very important.

The treatment of cysts of the neck in my hands has been most satisfactory by excision and I regard it as better than tapping and injections. The question has come up in my mind this morning, as it has many times before, whether myxœdema following extirpation of the glands is as likely to occur here as it does in the countries where the condition is of so much more frequent occurrence, and from which the statistics are compiled. It is my belief that it is not.

DR. RODMAN—I thank the gentlemen for the favorable reception they have given my paper.

I find that the treatment by tapping and injection has effected many cures in eminent hands, but I regard excision as safer and better.

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# SELECTIONS.

## Tracheotomy and Intubation in the Children's Hospital at Zurich.

—BY G. BAER.—In this hospital the surgical department of which is under Von Muralt's direction, O'Dwyer's intubation has been carefully practiced, and always with good results, so that now in all diphtheritic cases, stenosis of the larynx, etc., whenever indicated, intubation has become the primary operation. Baer gives the entire history of all cases which occurred from the founding of the hospital in 1874 until 1891. Careful tables of statistics in which are classified the total mortality, the years and seasons in which the cases occurred, ages of patients and the percentage of recoveries from the operation, according to the nature of the disease.

The number of cases reported is 690, of which about 43 per cent. resulted fatally. In 60 per cent. of the cases classified as to age, the youngest have the greatest mortality. Up to the first year of age about 75 per cent. succumbed, and from the eleventh year, only 8.3 per cent. The total number of operations (tracheotomy and intubation both) was 404. During the years 1874 to 1888, tracheotomy only was resorted to in about 323 cases. Later, when intubation was practiced only seven tracheotomies were performed, mostly on account of great swelling of the tonsils with closure of the nasal passages, which rendered intubation impracticable. Seventy-four cases were submitted to intubation, upon nineteen of which tracheotomy was subsequently performed. The mortality of the 404 operations is about 256, or 63.4 per cent. Out of the 323 patients on whom tracheotomy was performed 210 died; of the eighty-one intubations only forty-six succeeded.

The mortality statistics of the entire number, including the non-operative cases point strongly in favor of intubation. More striking is the difference in the more dangerous cases of early life. From the first to the sixth year fatal cases in which tracheotomy was performed showed about 51 per cent. and in intubation only 41 per cent., a good 10 per cent. difference in favor of the latter. Besides, during that period in which intubation was entirely resorted to, a great majority of the cases were those of complicated pharyngeo-laryngeal diphtheria, whereas the more simple laryngeal cases were few. The result is all the more noteworthy in that this hospital receives as a rule smaller children. Thirty-five of those intubated were under three years of age.

Following these general statistics is a history of the seventy-four intubation cases with clinical observations, which on the whole overrule the objections made against this operation.

Baer follows the O'Dwyer method except in one point—he does not remove the string from the tube, but fastens it securely between the teeth. This not only prevents the tube from being swallowed or slipping down, but also renders the use of the extubator unnecessary. The withdrawal of the tube can be quickly accomplished with the finger by the nurse in critical moments, and as a re-intubation seldom requires immediate performance this makes the operation more practicable in private practice.

Baer attaches no importance to Escherich's objections, that it adds to the danger from pneumonia, and that the tube prevents expectoration. Although 44 per cent. of the seventy-four cases had pneumonia which had already existed at the time of operation, or had followed it so quickly that it could not be considered as due to the operation itself. In only four of the patients operated on this might have possibly been the case, but the author calls attention to the fact that inflammation of the lungs also follows tracheotomies and if appearing at all, comes somewhere between the third and sixth day after the appearance of diphtheria, so that causes beyond the operative procedures seems to be responsible for this.

The objection that expectoration is less than through the wide tubes used in tracheotomies, Baer refutes, by stating that occasional swabbing out of the throats of intubated patients is quite efficient in removing clots of mucous, membrane, etc. No doubt in children, what is coughed up is immediately swallowed and no evil results from it, such as secondary diphtheritic infection of the alimentary canal. At all events, the clearing of the tube gives sufficient supply of air and if the openings at the head of the tube are made a trifle smaller, this can only be more favorable for expectoration as it can be more readily accomplished through a small than a large opening. Accidents during the operation (intubation) there were none. In only one case the tube persistently took the wrong direction into the trachea, and the patient was finally cured by tracheotomy. This, by the way, was the only case where a secondary operation was required. Swallowing of the tube, or slipping into the trachea never happened, nor asphyxiation from accumulation of secretions on the tube. There were also no injuries from intubation, to avoid which great care must be exercised in the selection of tubes which are not too large. That pieces of membrane may become crowded down into the trachea during the operation, the author admits, but considers this accident very rare; in such cases tracheotomy can be resorted to. Usually, however, the membrane is gotten rid of in the natural way, through the tube or by coughing. In order to avoid this complication, tubes with a short shaft should be used like O'Dwyer's model of 1890, the shaft of which is only 3 cm. long. The opening in the head piece is larger than in the older models in order to facilitate expectoration. The coughing up of the tube should be regarded more as a favorable than an unfavorable occurrence. When this happens during the first few days after the operation, it is usually followed by coughing up of tough masses of membrane; if happening later, it is almost always a sign that the larynx is returning to its normal condition; it is so to speak, a spontaneous expulsion. In all of the cases, however, there was plenty of time for the physician to replace the tube. It must be admitted that with intubated children, catarrhal disturbances and difficulties of nutrition were frequent, but patients upon whom tracheotomy has been performed suffer from this also. These difficulties can be met in various ways. If fluids can not be swallowed, semi-fluids may be tried, or swallowing with the head laid low, or the tube may be temporarily removed.

The different alterations and remodelings which the tube is undergoing from time to time, promises relief in this direction. In the Zurich hospital, as well as by O'Dwyer himself, such changes have been attempted The author adds several chapters on the practice of intubation in cases of chronic stenosis in patients upon whom tracheotomy has been performed, and also in the acute stenosis of non-diphtheritic patients.

On the whole, the work is deserving of great praise and can not fail to gain new friends for intubation.—*From the Centralblatt fur Chirurgie*, July, 1893.

# BOOK NOTICES.

**Dunglison's New Pronouncing Medical Dictionary.** A new edition of Dunglison's Medical Dictionary, by RICHARD J. DUNGLISON, is announced as in press for early publication. It has been thoroughly revised and greatly enlarged, and will contain about 44,000 new medical words and phrases. Pronunciation has been introduced into the new edition by means of a simple phonetic spelling. In the new edition much encyclopædic information, difficult of access elsewhere, will be found conveniently at hand. Especial attention has been devoted to matters of practical value. A review will appear in an early issue.

**A Defense of Gastronomy.** When a physician, who also has just claims to the title of philosopher, discourses entertainingly upon a subject of universal interest, his statements should receive attentive consideration; but when the author is an American and a veteran medical editor, he has the right to demand from us not only a hearing, but also a favorable judgment. DR. DANIEL G. BRINTON has just favored the public by writing a book on "The Pursuit of Happiness" (Phila., 1893), which abounds in wit and wisdom, and in which he summarizes the experience of an observer of unusual qualifications for the task which he has so well completed. As gastronomy is a medical topic, we extract the following paragraphs on this subject from Dr. Brinton's work for the entertainment of such of our readers as are interested in the æsthetic relations of dietetics:

"All nations of culture have connected a certain solemn joy with the act of taking food. To "break bread" with one is the expression of the sweet sentiment of hospitality, and for the lovers to share the same loaf before the High Priest was the simple and beautiful marriage rite among the ancient Romans. The "love-feasts" of the early Christians were the repetitions of the only ceremony which their Founder prescribed; and science traces to appropriate nutrition the growth of both physical and mental abilities. The devout Novalis called meal times the 'flower-seasons of the day,' and claimed that all spiritual joys can be expressed through the service of the table. Can there be anything in it unworthy or debasing?

"In the light of such declaration should we look on our food-taking, and not merely as feeding and filling. Were the kitchen more of a studio in American homes, we should see a higher style of art in the drawing-rooms. The worst preparation for a day's work is a poor breakfast and its shabbiest reward is a bad dinner. If our daughters studied more diligently what the Italians call the *melodia del gusto*, their married lives would be attuned to a more harmonious accord.

"Consider the appointments and symmetry of a well served dinner in that high style of art which the French have brought to perfection. The mere sight of the table awakens our æsthetic feelings, disperses the cares that have infested the day and softens the asperities which its rude conflicts have developed. The snowy cloth with its embroidered center piece, bearing a vase of roses or restful green; the gay triumphs of the potter's skill, flanked by polished metal and diaphanous crystal, whose varied forms hint of the manifold gifts of the grape; the chairs so disposed as to suggest how we should live our whole lives—ever near to others, but not jostling them. Then how rhythmical the progress of the repast! the cold, salt shell fish, followed by the hot and spicy soup, harmonized by the neutral flavor of the fish, its creamy sauces relieved by the bare suspicion of the clear acid of the lemon; and so on through the courses, until the aromatic coffee and the tiny glass of liqueur, redolent of wild herbs or of Alpine flowers, remove both thoughts of food and a sense of satiety.

"The sequence of such a repast is not a conventionality. Medical men as well as epicures know that it is based on physiology. Once, with a friend of like inquiring mind, I ordered a dinner at a restaurant of renown, exactly reversing the usual sequence, beginning with Chartreuse, coffee and ice-cream, ending with soup, oysters and hock. The experiment convinced us that the received is the right sequence, and we made no second attempt to put the wrong end foremost.

"Many will cry that such a dinner as I describe is one for the millionaire and not for the million. They are in error. In France, I have partaken of such in families of very humble means. They are in fact economical. At an ordinary American dinner, I have seen seven vegetables and two meats served at once. Half the number would have set forth a much better repast, if served in the French manner. Moreover, an elaborate dinner is not desirable daily, but to have one, say weekly, is as improving as going to the opera or listening to a great poet read his own verses.

"An essential precept of gastronomic culture is to cultivate a taste for all customary dishes. Every locality has its own. Snails and mussels and cockscombs are favorite dishes in Paris, but I have found few Americans enlightened enough to be willing to like them. A broad taste adds to one's pleasure and that of others. How disappointing the guest who refuses dish after dish planned with an eye to his pleasure.

"Do not be ashamed of the enjoyments of life which are derived from judicious eating and drinking. There are no more accurate standards of a family than its table manners, table service, table talk. Culture is reflected in them as in a mirror. Care not if the bigots and Pharisees call you a wine-bibber and a glutton. You will not be the first to whom they have applied those epithets, and you need not be ashamed of your company."

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SATURDAY, AUGUST 19, 1893.

## THE TREATMENT OF TYPHOID FEVER.

In the topic which heads this editorial the medical profession is certainly as much interested as it is in the treatment of pulmonary phthisis. The able papers and discussions which we have presented to our readers in the columns of the JOURNAL during the past few weeks have been of great value as reflecting the opinions of active practitioners whose practical experience is of inestimable service to less favored colleagues, yet the fundamental rules governing the management of enteric fever are not modified by these expressions of opinion. Differences in belief may exist, whether intestinal antisepsis is desirable or obtainable in typhoid fever, and whether this temperature or that, is to be treated as a dangerous symptom, but the important fact that enteric fever is a disease in which good nursing and watching are the real factors productive in bringing about recovery, is universally recognized. In typhoid fever above all other diseases the physician must recognize that a cure is impossible, that he can guide the patient through the storm but not stop the storm, and that the only object he may expect to accomplish is the control of symptoms which directly or indirectly affect the patient unfavorably. While he may not be able to remove the cause of the symptoms the very relief may be advantageous. Thus a delirium indicative of great mental or physical distress, or the presence of some complication inducing pain may so exhaust the patient's vitality as to seriously impair his chances of recovery, and measures directed to the relief of these symptoms may save the particles of strength needed to carry the case over some crisis in his attack. There is therefore no specific or routine treatment by internal methods which should be resorted to when the diagnosis of typhoid fever is established, but there are two external methods aside from feeding which may be applied to so nearly every case as to be called routine, namely, absolute rest in bed flat on the back, and the use of the bath in a more or less modified form. A simple mixture designed to maintain free action of the kidneys or stomach may be ordered in each case, chiefly to comfort the patient and his friends, but beyond this nothing is to be used without a distinct indication by some prominent symptom.

The necessity of absolute rest in early stages of enteric fever is known to every one, yet it often requires the most strenuous efforts on the part of the physician, particularly if not aided by a trained nurse, to maintain the degree of rest necessary. If there is one factor potent in rendering a prognosis unfavorable in enteric fever it is the neglect of this precaution in the smallest detail, and every rising to stool may be regarded as a most unfortunate cause of future trouble and danger.

The use of the bath, or more correctly water in any form during typhoid fever, stands next in importance and next in its approach to routine. It is a mistaken idea with many physicians that the water treatment of typhoid is solely indicated by high fever. Nothing can be more erroneous. While high temperature is without doubt a most important indication for the bath treatment, extreme restlessness is also a positive reason for its employment. Further than this there can be no doubt that the use of water not only lowers excessive temperature but prevents its rapid return and in some way advantageously modifies nutritional changes. Restlessness and insomnia accompanying fever too slight to require the full bath are often entirely relieved by a tepid sponging which soothes the irritated skin and equalizes the circulation, refreshing and invigorating the patient. Each part so sponged should be immediately rubbed dry so that the patient may not be relaxed by soaking. We presume this does not apply to the cases of high fever in which friction with the hand must be used to bring the blood to the surface where it may be cooled. We have not tried to indicate in this article the medicinal treatment required by various complications, as space forbids, but we are sure that if these views are followed complications will be less frequent and a firm basis maintained for rational measures sometimes necessary for the relief of accidents.

## THE PAN-AMERICAN MEDICAL CONGRESS.

With the next issue of the JOURNAL we will complete the publication of the preliminary programs of the different Sections of the coming Congress. All doubts that have been expressed concerning its success are now set at rest, and this Congress is destined to go into history as one of the most successful medical meetings ever held on this continent. It is no disparagement to the Ninth International Medical Congress to make this assertion, for the managers of that Congress had the constant and determined opposition of many of our most influential medical leaders, and of the medical press east of the Alleghanies.

Happily, DOCTORS PEPPER and REED have encountered no such fierce opposition; a united American medical profession have marched under their leadership in the most harmonious fashion and without the slightest friction or bitterness.

Contrary to the general opinion, our colleagues from the other Americas and the Islands of Pan-American seas, have generously responded to the call, and they are well represented upon the program of every Section. They will be welcomed with true Pan-American hospitality, and we trust that this meeting will signalize the beginning of that bond of fraternal union which all Americans hope may grow stronger with each recurring triennial.

The Washington committee have left nothing undone that would inure to the success of the meeting, and the Congress of the United States in making a liberal appropriation for it, were governed by motives of patriotism, and the spirit of encouragement of the liberal arts and sciences.

From a scientific standpoint the program of the Congress leaves little to be desired; there might in future Congresses if any are to be held, be fewer sections and more consolidation, but in a country where every man is a born leader he must have something to lead. Moreover, the experience of this organization will be of great service to those that are to follow. Meanwhile, let us in advance heartily congratulate PRESIDENT PEPPER, SECRETARY GENERAL REED and the other officers of the Congress, on the assured prospect of the undisputed and deserved success now about to crown their labors.

## ASPECTS OF AMERICAN PHARMACY.

The *Chemist and Druggist*, July 29, treats briefly of an apparent downward tendency in the pharmacy of this country. It implies that while there are still men of high caliber in the front ranks, the days of "the Parrishes and Procters are ended." The rank and file are not satisfactory, chiefly because the door of entry into that department of life work is too wide and too easy, and also because there are too many stores. Competition is too great to enable good workmen to sustain themselves.

Another fault is found in the loose organization of boards of pharmacy; and the latter are or may be so administered that their qualifying examinations are far from being a test of sound professional knowledge. The remuneration to be obtained by the members of such boards is commonly quite inadequate to command the services of the best men.

"Some teachers, a few examiners, and some prominent pharmacists have endeavored to warn the trade of the evil, and have urged prompt remedies; but there is no sympathy with such notions, and the immediate result is that young men of good education give pharmacy a wide berth. What appears to be necessary before American pharmacy can take its rightful position is that—

1. An examination in English, arithmetic, and Latin, or French, or German, should be instituted and passed by candidates before commencing apprenticeship.

2. Evidence should be produced to show that candidates for a license have been engaged for four years in dispensing and making pharmacopœial preparations, one year at a college of pharmacy being recognized as part of the period.

3. The boards of pharmacy should be reconstituted so as to free them from executive functions, and devote themselves solely to the examination of candidates. With this object, only men of distinguished collegiate career who are known to be up to date in all the branches of knowledge pertaining to pharmacy should be appointed, and the honorarium should be such that the best men can afford to give their services.

It is the opinion of some of those best capable of judging in America, that less than 5 per cent. of those entering the drug trade in the United States could pass the English preliminary examination, and probably not 1 per cent. could attempt the Latin paper. It has been even questioned if one in a dozen of the members of the boards of pharmacy could write an English prescription in full Latin. It may be asked why, if that is so, American pharmacists do such good work. Their pharmacopœia touches the high water mark; how can that be? The answer really shows the possibilities of American pharmacy. The workers in research, the men who compile pharmacopœias, are the pick of the thoroughly educated class, some of them naturalized citizens whose early training was obtained in Europe. American pharmacy would be bad indeed if from its 30,000 followers a score or two fit men could not be picked for the best work. But the conditions are altogether opposed to the growth of this class, and unless educational and examination reforms are introduced for the improvement of the trade, the United States pharmacopœia will become an expression of the opinions of teachers or professors and of chemists to manufacturing houses. That is a consummation not desirable from any point of view."

## THE MEETING OF THE MILITARY SURGEONS.

To those of the profession who have an interest in the progress of the workers in a particular line, the proceedings of the Association of Military Surgeons will be specially attractive. The Association has a manifold labor before it. It has to build up itself as an association, to reorganize on the most approved basis the medical organizations of its various members and to stir up the energies of our military medical men to a thorough appreciation of the responsibilities of their position. In effecting either of the last two tasks it will accomplish the first—the consolidation of its own organization into a permanent and valuable institution. Probably greater progress will at first be made in the education of the individual than in attempts to effect changes in existing organizations. Both are needed; but the latter will be accomplished only when a majority of the medical officers concerned have a full and complete knowledge of their duties and responsibilities in war and in peace and of the methods by which they may best be fulfilled. The Surgeon General of the Army has recently established a medical school in which young graduates who have been selected by competitive examination are required to attend a four months' course from 9 A. M. to 4 P. M. daily to prepare them to undertake their medico-military duties. This shows that something more is required than a medical education, a commission and a uniform, to enable one to become a qualified military surgeon. The routine duties of a medical officer of the State military forces are easily learned; but the duties of active service in time of war which in peace he is expected to prepare for, require time, study and practice. Much more than a few days' outing in a summer camp is evidently needful. The Association should formulate its views on the special requirements of candidates for commission, and urge that no medical man be appointed unless he has shown himself possessed of the necessary technical knowledge.

This brings us to the second point, that of organization. Here earnest work will be required to accomplish the necessary changes. It is difficult to get out of the old ruts, but the day of the regimental surgeon and his assistants has passed. The State medical departments should be organized after modern methods to obtain from them at all times their best work and to render them assimilable, in the event of war, with the medical department of the regular army. A staff of specially educated medical officers and a well drilled hospital corps are as essential to the well being of the State troops as to that of the Home Service troops of Great Britain; both may be called upon at any time to take the field. Already our military surgeons are progressing in this direction, and we look to the Association hopefully for the speedy accomplishment of that reorganization which will enable all to be consolidated in an emergency into one compact, U. S. MEDICAL STAFF CORPS.

## THE CHOLERA SITUATION.

During the month of April the situation in regard to the introduction of cholera into this country looked quite threatening; in the months of May and June there seemed to be a lull in Europe, but July there was a marked increase in the number of cases and deaths, and also of infected places. This was simply following the history of all epidemics and pandemics of cholera, and it was to be expected that a recrudescence of the disease would occur with the advent of high temperature in many localities. This obtains especially with regard to Russia and France. While the fatality is not so great as it was last year, still in some localities in Russia the mortality is very high. The figures given by cablegram from London for last week are as follows: Podolia 484 cases, 175 deaths; Orel, 327 cases, 110 deaths; Don region, 354 cases, 147 deaths; Kieff, 290 cases, 91 deaths; Grondo, 110 cases, 27 deaths; Nijni Novgorod, 259 cases, 102 deaths; Kherson, 50 cases, 18 deaths; Yaroslav, 38 cases, 15 deaths; Kazyn, 39 cases, 13 deaths; Moscow, not including Moscow City, 27 cases, 9 deaths. In Moscow city there was an average of thirty cases, and fifteen deaths daily. It will be seen that it principally prevails in the southern portion of Russia, while it is true that a few cases have appeared in St. Petersburg this year. This condition of affairs has stimulated the German authorities and there are now only two points through which communication is held with Russia. Hamburg has forbidden and will not allow emigrants from Russia to come to that place, a precaution which if it had been taken last year would probably have saved the city a bitter experience. Germany, also, has forbidden the importation of hay, straw and fodder from Russia for the same reasons. Bremen still receives Russian emigrants, but they are not allowed to be sent to this country until after proper detention and purification and disinfection of themselves and their baggage. Some of them have also reached Naples by way of Odessa and a number of them within the last week arrived in Paris, having been brought there through Baron Hirsch's agency. In Roumania a number of cases have occurred and the authorities have prohibited communication with Russia, in consequence of the occurrence of cases in Bessarabia. Austria has had quite a scare during the last week by the breaking out of cholera along the line of a canal now being dug, the cases occurring among the workmen.

There is still some cholera in Hungary and the lower Danube. In France, cholera has existed in the northwestern portion and is increasing in the southern portion, but owing to the reticence observed by the French authorities, it is impossible to tell all the localities in which it exists. The authorities are pursuing a similar course to that which they took in Marseilles and Toulon in 1884, when they called cholera, cholerine. France evidently is not yet observing the agreement of the Dresden conference of this year, at which each country pledged itself to notify the others of the presence of cholera within its borders. France has always pursued the policy of concealment as much as it possibly could, with the result of more outbreaks of the disease, than if a different course had been pursued. Four vessels with cholera aboard arrived during July at four separate and widely different localities in England, having sailed from or touched at ports in France or Italy, but so far, owing to the promptness of the authorities, there has not been any spread of the disease. The *Myrtle Branch* arrived in the river Tyne from Nantes; the *Widdington* in Penarth Roads from Marseilles via Malta; the *Blue Jacket* in Cardiff and the *Altmore* at Gravesend, both of the latter having sailed from Marseilles. On the last named vessel was a fireman in a state of convalescence and his case affords an instructive lesson as to the duration of the infection in a person who has suffered from cholera. The *Altmore* arrived at Marseilles on July 3 and left on July 5. The fireman was on shore during the whole time of her stay there, and on July 7 was attacked by very severe diarrhœa (twelve times in twelve hours), vomiting, and cramps. He became faint and collapsed, and the captain gave him quinine and iron. When the ship arrived at Gravesend on July 17, the fireman was still feeble, and although nominally at work was able to do very little. The vessel was cleansed by the Customs officers, and the usual certificate given. Dr. Williams, however, the Assistant Medical Inspector, found the case, and sent him to the Hospital. The presence of the cholera bacillus in the evacuations of the patient was demonstrated by Dr. Macfadyen at the College of State Medicine. This is very important, as it affords further evidence that a patient who might thoroughly be called convalescent was still capable of communicating the infection. It cannot, therefore, be proper to allow patients who have recovered from cholera to leave the hospital until some time after convalescence has been established. Dr. Collingridge is of opinion that the period ought to be fourteen days. This fact obviously throws a very serious responsibility on medical officers of health. The ship *Altmore*, has been thoroughly fumigated and disinfected with corrosive sublimate under Dr. Collingridge's directions; the water tanks have been emptied and cleaned, the bilges disinfected, and all clothing treated with superheated steam. (*British Medical Journal.*) It must also be recollected that it was stated by an observer in St. Petersburg, last year that the comma bacillus was found in the evacuations of a man who was not suffering from cholera. This naturally suggests the question whether this disease may not be spread by walking cases.

At the moment of writing, *The Lancet* just at hand, reports the arrival at Gravesend of the *Bona* from Burmah, with several suspicious cases on board, one fireman having died on the day of seizure by a malady held to be cholera. A Danish steamer on its way from Antwerp put into the Humber on the 2d of August with one of the crew ill from cholera. Since that date four cases have been reported in Antwerp. The *Elizabeth McNeal*, bound from Cherbourg to Rochester, arriving at the Noire on the 2d inst. was found to have a case of cholera on board.

So far, no authentic case of cholera has developed in Germany during the last two months, showing the stringent precautions exercised in that Empire.

The outbreak in Mecca seems to have exhausted itself, while at Bassorah and at a few points in Turkey in Asia, cases have been reported, as also at Smyrna. It does not seem that the returning pilgrims from Mecca have scattered the disease to a great extent. At El-Tor a number of cases have however, occurred, there being still in quarantine at that place over 12,000 pilgrims, and 6,000 more on shipboard.

In Italy a number of cases have occurred at Alessandria and in Piedmont during the last month, and cases are also reported at Rome. The Italian authorities announced that the disease was suppressed at Alessandria. It is plainly evident that the disease existed at other points as on July 19th, Dr. Young of the Marine Hospital service announced the existence of cholera in Naples. This was contradicted by the authorities and for a time the Italian government undoubtedly wished to suppress any indication of the existence of cholera, but the time came when the fact could no longer be withheld, and official announcement was made. An officer of the Italian government went from Rome to Naples and while there contracted the disease and died. Since, the government has forbidden pilgrimage to Rome, and within the last week has placed a medical officer on each train running between Naples and Rome to inspect and take care of such passengers as may be attacked with the disease. In consequence of the unfavorable aspect in Italy the International Medical Congress at Rome has been postponed until April. The Italian government asserts that the disease was introduced into Italy by some Italian workmen coming from Marseilles.

The action of Dr. Young, in communicating the intelligence that cholera existed in Naples cannot be too highly commended, as the importance thereof to this country is shown by the following New York Health officer's telegram:

"Steamship Karamania cleared from Naples on the 15th of July with 471 passengers. Officers and crew sufficient to make up a total of 524 persons. All in good health according to the bill of health. All vaccinated and effects inspected. Signed, Twells, U. S. Consul; Young, assistant surgeon. M. H. S." On the second day out Rosa Buccola, died. Surgeon making autopsy stated cause of death to be congestion of the lungs, and that she was ill when she came on board. The steamer touched at Gibraltar on the 20th, when the consular visa of bill of health was granted by the Consul, who, after writing in the above statement, said "Steamship leaves in free pratique." (I may add that this patient had diarrhœa as well.) The following is the history of the two cases which died just before reaching port:

An Italian, aged 40, was taken suddenly ill. Found in a very prostrated condition. Complained of pain in right side and diarrhœa. Removed immediately to ship's hospital. On August 2d, after treatment, he seemed to be slightly improved. Later on he became rapidly worse, diarrhœa and vomiting. Some cramps in legs and arms. He died at 8 A. M. on the 3rd. On the 1st, a woman, aged 23, Italian, began to have diarrhœa. Great prostration; pulse weak. She continued to grow weak. Complained of abdominal pain. Began sinking in the night. Died morning of 3d. Buried at sea. There were several cases of diarrhœa between the 17th of July and the 1st of August on board. The vessel has been ordered to lower quarantine, and passengers will be transferred at once. They will be detained five days at least.

An inspection was made of the passengers, but no new cases found. It was decided, however, and under the circumstances very properly, that all should be transferred to Hoffmann's Island for cleansing, disinfection and observation. After a short time suspicious cases began to develop; these were promptly transferred to Swinburne Island and some of them were pronounced, after the bacteriological examination was made, to be suffering from cholera. Four deaths have so far occurred by this disease, and there are now in the hospital a total of twenty; of these fourteen have cholera, one convalescent, three not having cholera and two suspects. The disease is said to be of a mild type.

It is to be regretted that the improvements at Hoffmann's Island had not been completed before the arrival of cholera.

As it will probably be some time before the immigrants of the Karamania are discharged, it would seem advisable for the health officer to consider carefully the lesson afforded by the Gravesend experience, and to devote his attention to the prevention of the possibility of any infection being conveyed by convalescents. To this end it would be probably desirable to have the evacuations of the convalescents periodically and carefully examined.

The situation in the port of New York now naturally causes anxiety throughout the country, and the responsibility of those in charge is very great. No immigrants should be allowed to land in this country from any ports in France or from any vessels that touch at any ports in France, from Italy, and especially from ports bordering on the northern and eastern portion of the Mediterranean Sea, or from Russia, except under the most rigid surveillance.

The quarantine of the port of New York is again on trial, and it will not do to omit any precaution to prevent the introduction of disease into the United States. While it is true that during the last two or three days no new cases have occurred, there is still danger.

As we go to press, an increased number of cases in Russia is reported by cable, and four cases of cholera among Poles are announced at Berlin, and the disease is spreading from Naples to other coast towns.

### DISINFECTION CIRCULAR.

We give in this issue the full text of the circular regarding the use of disinfectants just issued by the Surgeon General of the Army for the instruction of his medical officers. This must be accepted as an *ex cathedrâ* utterance, as it is to the work of Surgeon General Sternberg as chairman of the Committee on Disinfectants of the American Public Health Association that the profession owes its present advanced knowledge on this subject.

His instructions will therefore receive merited attention from the medical profession, and particularly from municipal and other health officers. He insists on the needlessness of using disinfectants when there is no infectious material to be disinfected, and suggests that even the use of antiseptics and deodorants implies somewhat of a reproach as indicating a neglect of cleanliness and strict sanitary police. Another of the points on which he lays special stress is the unnecessary call for *superheated* steam, requiring a specially constructed steam-chamber, which is so generally found even in official instructions on this subject; free exposure to flowing steam for one hour being sufficient to secure disinfection. The transference of infection by flies from excreta to the surface of meat, milk or other food supplies is also referred to as suggesting the need for careful disinfection in this direction. We commend this circular to attentive consideration in view of present conditions, with cholera at our eastern portals and yellow fever officially announced on our southern shores.

## SOCIETY NEWS.

### The Association of Military Surgeons of the National Guard of the United States.

*Abstract of the Proceedings of the Third Annual Meeting, held in Chicago, Ill., August 8, 9 and 10, 1893.*

*(Continued from page 246.)*

At the executive session held in the morning, the name of the Association was changed to "The Association of Military Surgeons of the United States."

SECOND DAY—AFTERNOON SESSION.

The Association was called to order in the U. S. Government Building at Jackson Park at 2 P.M. by President Senn.

The first paper read was by Dr. Herbert L. Burrell of Boston, entitled

### GUNSHOT WOUNDS OF JOINTS.

The author said that all writers agree upon dividing the effect of bullets into zones. Zone one extends up to 400 meters of distance. A 30 caliber bullet has a decidedly explosive effect, but less than 45 caliber. He reported two cases which illustrated the difference in the destructive effects upon the spongy ends of bones entering into the formation of the knee joint, at 350 yards. The skin of every subject of the reception of a gunshot wound is septic. It is the author's belief that all that can be done for a patient receiving an injury at the "line of fire" is—

1. To check the primary hemorrhage by means of tourniquets.

2. To apply antiseptic dressings (iodoform gauze), or some dry antiseptic.

3. To prevent further injury to the patient during his speedy removal to the field hospital.

The author formulated the following conclusions as regards gunshot wounds of the joints with the new 30 caliber projectile: (*a*) that joints having large synovial cavities will have to be thoroughly explored and cleansed, except possibly where the injury has been received at mid and long range; (*b*) that small or superficial joints with small synovial areas will simply require cleansing and tamponnading; (*c*) that it will require a larger number of company bearers, Red Cross workers, and surgeons than have ever been assigned for duty; (*d*) that so far as joint injuries are concerned the new 30 caliber is more humane than the 40 caliber bullet.

**Dr. Louis LaGarde**, U. S. Army followed with a paper entitled,

### GUNSHOT INJURIES INFLICTED BY THE PROJECTILES OF HARD EXTERIOR,

which dealt principally with the comparative difference in the destructive effects between the number 30 caliber German silver jacketed bullet, and one 45 caliber leaden projectile. If we look back upon the conditions which influence destructive effects in wounds we will find three factors, namely, velocity of the projectile, resistance of impact, and deformation of the projectile. Projectiles of hard exterior are more humane than those of the old armament. One of the chief causes of death on the field of battle is said to arise from fatal primary hemorrhage. Morandy ascribes 75 per cent. of deaths to this cause. Lidell places the percentage at 30, and Legouest at 18 per cent. These figures, the speaker thought, were founded on mere assumption, because as a rule surgeons are so busy in caring for the wounded after a battle that there is no time to devote to the dead, hence the lack of precise data. With the use of the new armament, he believes the cases of fatal primary hemorrhage will be less. In making this statement he was mindful of the fact that the majority of the writers on this subject entertained the opposite view. He had based his conviction upon the following mode of reasoning, that when the leaden projectile encounters resistant bone, pieces of lead are nearly always detached at the moment of impact. If the momentum of the projectile is still sufficient the pieces of lead are detached, splinters of bone act as secondary projectiles, and the danger to neighboring vessels is consequently increased. As long as the new projectiles beyond the zone of explosion cause less shattering, and they seldom deform, the amount of danger to blood vessels will not be so great, hence the percentage of fatal cases of primary hemorrhage in future wars should be less.

**Dr. G. D. Deshon** of Chicago, read a paper entitled

### THE MILITARY RIFLE AS VIEWED BY THE SURGEON.

The author dealt principally with the evolution of the rifle, and exhibited and demonstrated the modus operandi of the rifles used by different nations.

**Dr. A. C. Girard**, U. S. Army, read a paper entitled

### *WOUNDS MADE BY LARGE AND SMALL BULLETS.*

The paper was a digest of the past experience compared with experiments recently made on the effects of the small caliber infantry armament. By simple reasoning the author arrives at the conclusion that the energy of a projectile is the main factor controlling the amount of injury inflicted, and if the formula for energy is not correctly applied the whole fabric of the conclusions drawn from experiments with a reduced charge and computed distance is fallacious. Experiments had been recently made with the new small caliber weapons in Prussia which determined that the effects were, if anything, more destructive than those of large caliber guns.

**Professor Finkler** of the Imperial German Army, addressed the Association on the "Bacteriology and Chemistry of Tetanus."

**Dr. Charles Adams**, of First Regiment, Chicago, read a paper on

### GUNSHOT WOUNDS OF THE CHEST.

He said from the time of Larrey to the present, the proportion of wounds of the chest to the total number of wounded had been very nearly 1-12½ per cent. The fatality under modern methods of treatment, had been reduced from 30 to 75 per cent. under the old methods. Contusions of the thorax vary in degree from the superficial to those accompanied by the disorganization of the contained viscera. It has been frequently observed that a soldier has received a blow upon the chest from a spent bullet, has even in some instances been knocked down by it, convinced from his sensations that the ball had entered the chest, and has returned to duty as soon as his fears were allayed with no after consequences or only those of a trivial nature.

Wounds of the bony walls of the chest, without penetration of its cavity, include shot injuries of the sternum, clavicle, ribs, scapulæ and vertebræ. Fractures of the sternum, without opening the pleura or pericardium are of rare occurrence; often bullets, especially of small caliber, are embedded in the bone substance, and splitting and extensive shattering of the bone have been observed.

The *treatment of non-penetrating wounds of the chest* should be governed by the same rules which are applied to the treatment of wounds in general, the ideal in chest wounds being primary aseptic or antiseptic occlusion. Most penetrating wounds of the chest are complicated by wounds of the contained viscera.

Emphysema, unless very extensive, may be confidently expected to disappear under the compression of the dressing. If of large extent, multiple punctures may be made. All penetrating wounds of the chest should be carefully watched for hemorrhage. A patient suffering from a penetrating wound of the chest should be treated by absolute rest. Cooling drinks should be administered, or small pieces of ice, to allay thirst. The application of cold to the chest surface is not often a practical measure as the cold will not be effective through such a dressing as should be primarily supplied. This should be liberally thick. Of the drugs which have been recommended in chest wounds nothing calms the patient, eases pain and has better effect upon the hemorrhage than morphia given by hypodermic injection. Ergotin administered in the same way may be of service in hemorrhage. Digitalis may be needed to strengthen a heart failing from acute anemia.

**Dr. J. D. Griffith**, Surgeon General of Missouri, contributed a paper on

### GUNSHOT WOUNDS OF THE ABDOMEN,

which was read by Dr. LaGarde, in the absence of the author. The paper criticised observations that had been made as to the action of the new appliances of destruction on the living body and recorded some observations which the author had made.

The late rebellion in our own country, and the still more recent wars of Europe, had shown in their records the immense mortality of men wounded by the large leaden bullet. The ball now being used by our own Army and National Guard is heavier than either the English or Continental. The exceeding mortality of those wounded had naturally led our civilized world to look for a weapon more effective, yet more humane. This paradoxical condition had probably been found in our country by the adoption of the Krag-Jorgensen rifle, caliber 30. The small caliber repeating rifle is rapidly taking the place of the single loader of seven years ago. All the leading powers of Europe have taken steps towards re-armament with pieces not exceeding 31 in caliber. England, Germany, France, Austria, Italy, Russia, Denmark and Belgium have adopted the small bore system. To produce such a rapid change of armament, the small bore rifle must possess decided advantages over the larger caliber gun. These advantages, as claimed by Professor Hibler, are lighter ammunition, flatter trajectory and greater danger space, less deviation by the wind, less recoil, greater penetration, greater accuracy, and last, and the one which particularly affects the surgeon, wounds while sufficient to disable, are more humane..

Dr. Griffith then dwelt upon the establishment of a government medical college as well equipped as West Point in its line, and supported in the same manner, for the purpose of thoroughly educating men for the battlefield, from the litter bearer and ambulance corps to the finished surgeon.

The author related a series of experiments with the new gun, 30 caliber, nickel coated ball with leaden core, driven by smokeless powder; weight of ball 220 grains, amount of powder 37 grains, the distance from the muzzle of the gun to the target being a little over 300 yards. A number of beef intestines, some full of water, some half full and others empty, were suspended in a wet bag of chamois skin. Two layers of this covering the intestines were separated by half an inch, and the bag and contents fired into. Several large dogs were also provided. The conclusion reached is that the new rifle is anything but a humane gun in the first zone, the explosive effects being perfectly terrific; death being instantaneous in the dogs, even though no vital parts were struck. Again, it was noted that wherever a vessel was struck, the opening was absolutely clean cut as if by a knife—no "curling up" of the inner coat, so that hemorrhage could only be checked by stoppage of the heart beat.

(*To be continued.*)

**Medical Society of the Missouri Valley.**—The annual meeting of this society will be held in this city September 21st (Thursday) and continue in session one day. Members contributing papers must send titles to the secretary prior to August 25th, so they can appear on printed program, mailed September 1st. Applications for membership can be sent to Dr. J. F. White, Council Bluffs, Iowa, with a fee of two dollars enclosed.

A full meeting is expected; a profitable session desired.

Secretary's office, Council Bluffs, Iowa, Aug. 10th, 1893.
F. S. Thomas, M.D., Secretary.

**Southern Minnesota Medical Society.**—The second annual session of the Southern Minnesota Medical Association met Aug. 3rd at the Rochester State hospital. Several interesting papers were read. The officers elected were: president, Dr. A. F. Kilbourne, Rochester; first vice president, Dr. S. H. Van Cleve, Mantorville; second vice president, Dr. R. C. Dugan, Eyota; secretary and treasurer, Dr. H. H. Witherstine, Rochester.

**Prize Essay.**—The Belgian Gynecological and Obstetrical Society have decided to found an international annual competition bearing alternately on a gynecological or obstetrical question. Entries for the first competition will close September 1st, 1894. Manuscripts, written in French, must be sent before that date to the secretary-general of the society, M. Jacobs, 12 Rue des Petits-Carmes; must be marked by a motto or design, and be accompanied by a sealed envelope bearing a similar mark and enclosing the competitor's name and address. The prize will be the sum of three hundred francs. The subject of the competition for the coming year will be: "Chercher à établir par des expériences personnelles, anatomiques, physiologiques, chimiques, etc., le rôle rempli dans l'organisme par l'écoulement menstruel."—*Am. Jour. Obst.*, Aug., 1893.

## ASSOCIATION NEWS.

**Membership in the American Medical Association.**—The need for organization of local societies is apparent, and it is none too soon for efforts to be made in this direction. In accepting membership in the local or State society, as its qualification, the Association has for years taken the ground recently adopted by the Medical Society of the State of California. The onus of determining the professional fitness of an applicant is thrown upon the locality where he is best known, and upon presentation of the proper certificate there is no further question as to his eligibility. California is now ahead of most of the States in the possession of a more perfect organization. The present loophole in the constitution of the National organization is the dual portal of admission, and this the proposed constitution endeavors to remedy by providing that members can only join from a State society. The local society is the great factor of importance to the profession, and in States where membership in a local society is not a prerequisite of membership in the State society, the American Medical Association has at present no authority to uphold the "unit of professional organization."—*Occidental Med. Times*, Aug., '93.

## DOMESTIC CORRESPONDENCE.

### The Treatment of the Morphine Disease.

*To the Editor:—Sir*—To any who may desire it I shall take pleasure in sending a paper giving in full detail a method of treating morphinism that is simple, satisfactory and successful; and far in advance of any mode yet presented to accomplish two cardinal objects—minimum duration of treatment and maximum freedom from pain.

J. Mattison,
Medical Director Brooklyn Home for Habitués.

### A Query.

*To the Editor:*—Who is the *rising* chemist of New York city? Ans: He whose classic portrait precedes baking powder advertisements.

## MISCELLANY.

**New Cancer Cure.**—A recent issue of that sterling medical journal the New York *World*, informs us that Doctors W. T. Bull and W. B. Coley of New York city have discovered a new cancer cure, in the *Streptococcus Erysipelatosus*.

**Surgeon General of Washington.**—Dr. J. B. Eagleson of Seattle, has been appointed surgeon general of Washington on the staff of the commander-in-chief, with the rank of colonel, in the place of the lat Col. E. L. Smith.

**Saratoga Springs in Danger.**—It is stated that a recent well-boring in the vicinity of Saratoga opened up a vein of dry carbonic acid gas, and those who are interested in the perpetuity of the Springs are in trepidation lest this vein may be the carbonizing agency of their various sparkling fountains. If that vein should be tapped so as permanently to affect the Springs the losses at that health resort would be very considerable; in the millions, possibly.

**New Hospital.**—The trustees of St. Barnabas hospital, Minneapolis, contemplate the erection of a new brick hospital building upon the site of their present frame building. The new building will cost about $25,000.

**Distinguished German Dentists.**—Dr. Emil Richter of Berlin, arrived in Chicago August 9th with a distinguished party of German dentists. They have made the journey here from New York by easy stages, stopping at the notable places on the way. At the Dental Congress to be held here Aug. 14th to 19th they will represent the fatherland, and in the meanwhile they will enjoy the world's fair. There are nearly a dozen members in the party,

# THE PUBLIC SERVICES.

### U. S. Naval Laboratory and Department of Instruction.

By order of the Secretary of the Navy dated June 22, the Naval Laboratory at Brooklyn will hereafter be known as the U. S. Naval Laboratory and Department of Instruction. Immediately after admission to the Navy, assistant surgeons will be ordered to that institution, for such study and instruction as may be necessary to familiarize them with the duties of medical officers ashore and afloat.

The course of instruction will occupy three months.

A professional record is kept of the assistant surgeons' work, and when examined for promotion this record will be transmitted to the Naval Medical Examining Board for inspection, to be returned to the Bureau on completion of the examination.

### The Use of Disinfectants.

WAR DEPARTMENT, SURGEON GENERAL'S OFFICE,
Washington, August 9, 1893.

Requisitions received from time to time indicate that certain medical officers of the Army are not well informed with reference to *the use of disinfectants.*

It may be the meaning of A. R. 1656 and of paragraph 36 of the Supply Table has been misunderstood.

*A. R. 1656.* "Carbolic acid, chloride of lime, sulphate of iron, corrosive chloride of mercury, solution of chlorinated soda, and other articles required as antiseptics or disinfectants in hospitals, and for general use at military posts, will be issued by the Medical Department upon the requisition of the medical officer."

*Standard Supply Table, paragraph 36.* "Disinfectants for general post sanitation will be issued by the Medical Department upon the annual requisition."

The mistaken idea that disinfectants are required "for general post sanitation" in the absence of any infectious material to be destroyed seems to be very common among officers and non-commissioned officers of the Army, and should not receive support from officers of the Medical Department.

The definition of a disinfectant adopted by the Committee on Disinfectants of the American Public Health Association in 1885 has now been generally accepted by well informed sanitarians. This is as follows:

"The object of disinfection is to prevent the extension of infectious diseases by destroying the specific infectious material which gives rise to them. This is accomplished by the use of disinfectants.

"There can be no partial disinfection of such material; either its infecting power is destroyed, or it is not. In the latter case there is a failure to disinfect. *Nor can there be any disinfection in the absence of infectious material.*

"Antiseptic agents also exercise a restraining influence upon the development of disease germs, and their use during epidemics is to be recommended when masses of organic material in the vicinity of human habitations cannot be completely destroyed, or removed, or disinfected."

At the conclusion of the Lomb prize essay, published by the American Public Health Association in 1885, the following propositions are formulated:

"*Disinfection* consists in extinguishing the spark, killing the germ, which may light up an epidemic in the presence of a supply of combustible material—filth.

"The object of *general sanitary police* is to remove this combustible material out of the way, so that no harm may result even if the spark be introduced.

"*Antiseptics and deodorants* are useful when it is impracticable to remove offensive organic material from the vicinity of human habitations, but they are a poor substitute for cleanliness."

Chloride of lime, carbolic acid, and mercuric chloride are issued by the Medical Department for use as disinfectants, properly so called. A solution containing 4 per cent. of good chloride of lime, or 5 per cent of carbolic acid, is suitable for disinfecting the excreta of patients with cholera or typhoid fever, or the sputa of patients suffering from diphtheria, scarlet fever, or tuberculosis. The floors, furniture, etc., in rooms occupied by patients suffering from an infectious disease may be washed with a 2 per cent. solution of carbolic acid, or with a solution of mercuric chloride of 1:1000. Soiled bed linen, underclothing, etc., used by such patients should be immersed in one of the above mentioned solutions before it is sent to the laundry. *But in the absence of any infectious disease, these disinfecting agents are not required, and their expenditure for purposes of general post sanitation is not authorized.*

Sulphate of iron and other cheap antiseptics and deodorants may be used when necessary. But the necessity for their use is a reproach upon the sanitary police of a post and should only be required under exceptional circumstances.

The alvine discharges of healthy persons do not require disinfection, and when properly disposed of do not require treatment with any chemical agent whatever. If water-closets or earth-closets are offensive this is due to faulty construction, to insufficient supply of water or dry earth, or to neglect of ordinary cleanliness. The attempt to remedy such defects by the systematic use of antiseptics is expensive and unsatisfactory in its results.

The same is true of foul drains, bad-smelling urinals, accumulations of garbage, etc. The proper remedy for such conditions is cleanliness and strict sanitary police.

When accumulations of organic material undergoing decomposition can not be removed or buried, they may be treated with an antiseptic solution or with freshly burned quicklime. Quicklime is also a valuable disinfectant and may be substituted for the more expensive chloride of lime for disinfection of typhoid and cholera excreta, etc. For this purpose freshly prepared "milk of lime" should be used, containing about one part by weight of hydrate of lime to eight of water.

During the prevalence of an epidemic, or when there is reason to believe that infectious material has been introduced from any source, latrines and cesspools may be treated with milk of lime in the proportion of 5 parts to 100 parts of the contents of the vault, and the daily addition of 10 parts for 100 parts of daily increment of feces.

While the feces of healthy individuals in privy vaults or on the surface of the soil are innocuous, it is well known that epidemics of cholera, typhoid fever, and camp diarrhœa are usually due to the contamination of drinking water or food by microörganisms contained in the excreta of persons suffering from these diseases. This may occur as the result of direct contamination of the water supply, and probably, also, by the transfer of infectious material to the surface of meats, milk, and other articles of food by flies which have recently been in contact with infectious excreta. This source of infection has not heretofore received proper consideration, and the probability of its occurring when the feces of patients suffering from the diseases mentioned are deposited upon the surface of the ground, or in open privy vaults, calls for extreme care, especially during times of actual or threatened epidemic. In camp, where it is necessary to use open pits as latrines, dry earth, quicklime, or wood ashes should be frequently thrown upon the surface of fecal accumulations.

All known disease germs are destroyed by the temperature of boiling water, maintained for a few minutes. This being the case the destruction of articles of clothing which can be subjected to the action of boiling water or of live steam without material injury is unjustifiable. *Exposure to steam under considerable pressure, or to superheated steam, which* [illegible] *structed steam chamber, is an unnecessary exaction,* [illegible] *steam for one hour being sufficient to secure disinfec*[illegible] only to articles which can be freely exposed in a steam chamber, and not to mattresses, pillows, bundles of clothing, etc. As a rule immersion in boiling water for half an hour will be the most convenient and most economical method for disinfecting articles of clothing, bed linen, blankets, etc.

When hair mattresses and pillows need disinfection it will be necessary to open them up, either before or after immersing them in boiling water or in a disinfecting solution, in order that the hair may subsequently be thoroughly dried. When this is done the fact will be reported to the medical director of the department, and instructions will be given as to the disposition of the material.

When of little value, or in the absence of proper facilities for disinfection, mattresses, pillows and clothing may be destroyed in compliance with A. R. 1625; but the destruction of articles which can be disinfected without material injury by immersion in boiling water or a disinfecting solution is not authorized.

Geo. M. Sternberg,
*Surgeon General U. S. Army.*

**Army Changes.** Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from August 5, 1893, to August 11, 1893.

First Lieut. Frank R. Keefer, Asst. Surgeon, is granted leave of absence for one month and fifteen days, to take effect when his services can be spared.

Capt. Marlborough C. Wyeth, Asst. Surgeon, extension of leave of absence granted on account of sickness, is still further extended two months on account of sickness. By direction of the acting Secretary of War.

Capt. Marcus E. Taylor, Asst. Surgeon, having been found incapacitated for active service by an Army Retiring Board, will proceed to his home and report thence by letter to the Adjutant General of the Army.

Capt. Henry S. T. Harris, Asst. Surgeon (Ft. Keogh, Mont.), is granted leave of absence for one month, to take effect about August 16, 1893.

Major J. V. Lauderdale, Surgeon U. S. A., is hereby granted leave of absence for one month, to commence about September 5, 1893.

Majoi George W. Adair, Surgeon U. S. A., is granted leave of absence for three months, to take effect on or about September 4, 1893.

First Lieut. Charles E. B. Flagg, Asst. Surgeon, will proceed to the Yosemite National Park, California, for duty with Troop I, Fourth Cavalry, relieving Capt. Leonard Wood, Asst. Surgeon. Upon being thus relieved, Capt. Wood will return to his station, the Presidio of San Francisco, Cal.

Capt. Eugene L. Swift, Asst. Surgeon, is granted leave of absence for one month, to take effect upon the return from detached service of First Lieut. Henry C. Fisher, Asst. Surgeon.

First Lieut. Alfred E. Bradley, Asst. Surgeon U. S. A., is granted leave of absence for one month.

## LETTERS RECEIVED.

(**A**) Ayer, N. W., & Son, Philadelphia, Pa.; Anderson, W. S., Detroit, Mich.; (**B**) Beltman, B., Chicago; Bates, X. T., Poughkeepsie, N. Y.; (**C**) Collis, Warren J., Boston; Chambers & Co., J. H., St. Louis, Mo.; Cutter, Ephraim, New York; Crothers, T. D., Hartford, Conn.; (**D**) Doering, E. J., Chicago; Dietz, Chas. J., Chicago, Ill.; (**E**) Eagleson, Jas. B., Seattle, Wash.; Eichberg, Joseph, Cincinnati; (**G**) Ground, Wm. E., West Superior, Wis.; Gihon, A. L., U. S. N.; (**H**) Hunt, T. K., Cadott, Wis.; Hughes, C. H., St. Louis; (**M**) Miller, Roland E., Napa, Cal.; Malsbary, G. E., Cincinnati, O.; Merrell, Wm. S., Chemical Co., Cincinnati, O.; Mellier Drug Co., St. Louis; Manley, Thos. H., New York; McLauthlin, H. W., Denver, Col.; Mayo, W. J., Rochester, Minn.; (**P**) Parvins Sons, S. H., Cincinnati, Ohio; (**R**) Ricketts, B. M., Cincinnati; Reed, C. A. L., Cincinnati; Rumbold, Thos. F., San Francisco; Ridge, S. M., Kansas City, Mo.; (**S**) Slay Bros., New York, N. Y.; Sternberg, Gen. Geo. M., Washington; Smith, J. F., Baltimore, Md.; (**V**) Vaughan, Geo. T., Chicago; (**W**) Wiltrout, J. D., Hudson, Wis.

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# ADDRESSES.

## CHAIRMAN'S ADDRESS.

Read before the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY J. MILTON DUFF.
PITTSBURGH, PA.

*Members of the Section of Obstetrics and Diseases of Women in the American Medical Association:*—It is impossible to convey to you any idea of my high appreciation of the compliment paid to me, and to the State I represent, by calling upon me to preside over the deliberations of this distinguished and representative body of American physicians.

I should have hesitated to assume the duties of the position if I had not been encouraged by the knowledge of your sympathy, and by the confidence that through mutual coöperation we might make this one of the most interesting, instructive and influential meetings in the history of the Association.

### INTEREST IN MEETINGS.

The happy interest evinced in the meeting, by the large number of papers offered from all parts of the country, from men of the highest standing in the profession, is significant of the general zeal for the welfare of the American Medical Association, and of the keen interest taken in the work of this Section. In this connection I may say, that inasmuch as the papers to be accepted for the program were limited to forty, it became my unpleasant duty to decline with thanks quite a number of papers, many of them from my warm personal friends, and from gentlemen whose professional attainments make it an honor to this Association to have had the proffer of their aid.

### A DUTY OF THE CHAIRMAN.

The by-laws of the American Medical Association make it incumbent upon the chairman of each Section to prepare and deliver an address on the recent advancements in the branches belonging to his Section, including suggestions in regard to improvements in methods of work.

Unfortunately, in the strict fulfillment of the first part of this exaction, one is confronted with the delicate task of anticipating the major portion of the papers to be read before the Section; there are some general references, however, which I feel I may make with propriety, without unduly entrenching upon the subjects of the papers which will occupy your attention later.

### OBJECT OF MEETING.

We meet here to-day, not alone for our individual benefit, but as well for the benefit of our grand and noble profession, and in the interests of suffering humanity. As a representative body the results of our deliberations should be the property of the profession. Our deductions should be reached after the fullest discussion, and the most painstaking research, and then given the widest possible publication. We are expected to formulate principles, to commend certain operative procedures and lines of therapy, and to condemn others. The greater portion of the medical profession think for themselves, and think well; but at the same time the collective opinion of such a representative Association as this is eagerly sought by them.

With all due respect to those who with great labor prepare papers, as a rule the discussions are of as much, if not more benefit, than the papers themselves. It is not right, therefore, that the rich and luscious fruits of discussion should be lost. Except to those of us who hear the discussions, the meeting will be of no more benefit to the profession at large than they would have received had the readers of the various papers remained at their homes, and published their articles in the Journal of the American Medical Association without the discussions appended. I therefore emphasize the suggestion of my honored predecessor—that this Section should arrange for the publication of its transactions in permanent book form properly indexed. Our work should be done with an eye to the greatest good to the greatest number, not alone for the present but for the future. It should be a work so accomplished that it will leave behind it "a holy light which will be undimmed and undiminished by the lapse of years."

### RETROSPECTIVE AND PROSPECTIVE.

As we to-day stand upon the eminence of "Modern Knowledge" and take a retrospect, we are astonished at the rapid and rugged ascent we have made side by side with obstetrics, gynecology and abdominal surgery, especially during the past decade; we are charmed as we contemplate our present commanding position, and the soul is filled with delight as we compare our restricted environment in the shades below, with the glorious sunshine and the broad vista which now meets our wondering eyes. When we look upward we find there are greater heights to reach and perhaps more rugged paths to tread; but by persistent effort and reciprocal action, we may reasonably hope ere long to come in view of the "Eminence of Perfection."

### THE WORK OF THE PAST YEAR.

The work of the past year, while in the way of steady advancement, has not been characterized by much that was unique or peculiarly brilliant and original. Some conspicuous and very noteworthy new operations have been suggested and performed, many old ones have been retired or modified, and some few of ancient origin "phœnix-like" have arisen from their ashes with fair prospect of great popularity. Many matters of vital importance have been discussed on the floors of associations and in the columns of the journals, some of which eagerly await the dictum of this Association.

### NEW RECRUITS.

The list of special practitioners in the departments represented by this Section has had large accessions during the past year. A large proportion of these additions are men inspired by professional zeal and ambition; with natural talent developed by special training and hard labor, by several years experience in that school of severe discipline "general practice," while many of them in addition carry the trophies of a post-graduate course. This class are welcomed with a generous spirit to our ranks. We need them. We want just such earnest, energetic, qualified workers. I am constrained to say, however, that a large class of our last recruits are not of the proper caliber. They are hothouse plants of mushroom growth. They have never been in the broad field of experience. Their roots have not grown down deep in mother earth, nurtured by the rains and sunshine of many summers and made strong by the frosts and storms of many winters of active general work. They enter the ranks only to bring obloquy upon specialism and specialists. There may be a few, but very few exceptions to the rule, "college bred specialists in any branch of medicine are not a success." The *true specialist* is a creature of evolution from the general practitioner. I have no hesitancy in saying that any professor or number of professors who encourage their students in the idea that they are competent to walk straight from the college halls into any special line of practice are untrue to the trust reposed in them, and are deserving the condemnation of the profession.

### OUR EDUCATIONAL ADVANTAGES.

There has been great cause for rejoicing on account of the almost uniform action on the part of our medical colleges during the past year in increasing the course of study, and in demanding a higher standard of scholarship. Facilities for more thorough and scientific teaching are being adopted, and many of our schools are the pride of the profession and second to none in the world. I wish to call your attention, however, to the fact that in nearly all our colleges the facilities for teaching the other branches of medicine are far beyond those afforded for the teaching and study of obstetrics and gynecology. As a consequence our graduates are not qualified in these branches as they should be.

From the best information I can get after considerable investigation, I feel safe in saying that over 50 per cent. of the graduates in medicine leave the college halls without ever having witnessed a case of labor or having introduced a speculum. If this be true, is it any wonder that the rate of mortality will not down, and that malignant disease so often goes on almost to a fatal termination without its true character having been discovered? Far be it from me to speak of this as a reflection upon the many *worthy* and *true* men engaged in the teaching of these branches. They do the best they can under the circumstances. The reflection is rather upon the "boards of control" who, either through ignorance of the necessity, through parsimony, or from need of endowments fail to provide the proper hospital and clinical facilities.

It is our privilege and duty to demand of all institutions as a reward for our patronage that they employ instructors, not because of any financial or other influence they may have, but because they are competent to impart knowledge in the highest, broadest sense, and having employed them enable them to do good efficient work by providing the best possible facilities for instruction. Professors should be very careful to curb the innate tendency to magnify the importance of the capital operations, and perhaps through them their own ability as operators to the detriment and neglect of minor work. It is not an unusual thing to meet young practitioners who declare themselves not only competent, but willing and anxious to perform cœliotomies, hysterectomies, and cæsarian section; but who are unable to operate for a vesico-vaginal fistula, sew up a lacerated perineum, or to determine the diameters of the pelvis.

### OUR LITERATURE.

The literature of the year has been of such variety and character as to suit the tastes of the most fastidious. The standard works given to the profession are of a high character, some of them being perfect jewels of their type. It might not be becoming in me to specialize. The journals especially devoted to gynecology and obstetrics are to be congratulated on their increased merit. There has been more care taken in the selection of contributors, and as a rule in consequence the contributions are of a high character and contain more valuable and reliable information. The general medical journals also have given more recognition to the importance of these branches and have produced much of permanent value.

In fact, so much ability, energy and excellence is observable in most of our journals that we hesitate even to offer a suggestion, lest in our inexperience our judgment may be at fault. Without attempting to detract from their excellence we think we are expressing the humble opinion of a large portion of the profession when we say that many of our journals might become more effective, more dignified and more elevated in tone if they showed more of the personality of the editor. The absence of leading articles or editorials in some of our journals is, in the minds of many of the profession a great defect. The position of the editors naturally indicates that they are men of broad minds, and capable of forming comparatively correct opinions upon the topics embraced in the columns of their respective journals.

It is, therefore, due their readers that they give them the benefit of their discriminating judgment. This course is the more necessary because of the character of many of the journal articles. I have said there has been a great improvement in the past year but there is still room for greater improvement. Too much of our literature still comes from those seeking notoriety, and not from those who forget self in their earnest efforts to advance the interests of the profession. The young should be encouraged to observe and to write. Their fresh and pithy articles glowing with the ardor of youth infuse them with much that can be read with zest and benefit. The tendency on the part of some, however, to draw from the realms of their imagination should be curbed in order that their usefulness may not be effaced, or that they may not be misleading or productive of untold harm.

The tendency to exaggeration is not confined to the younger element alone; my strictures are perhaps equally applicable to some whose hairs have grown gray in the practice of their profession. Those, either young or old, who belong to the above category should as far as possible be excluded from among the contributors to our journals. Therefore, the greater necessity for discrimination and a knowledge of the standing in the profession, by the editor, of those who offer their productions.

While the young should be encouraged to observe and to write, the old who are rich in experience, trained in observation, should be impressed with the fact that they owe it to themselves, to the profession and to the world, to publish the winnowings from their storehouse of knowledge.

### OPERATIVE WORK.

The solicitude of many with regard to the operative mania which took possession of our profession during the past few years was not without cause. We think no one will have the temerity to deny that there has been, and yet is at the hands of some, too much indiscriminate, useless and ofttimes reckless abdominal, gynecic and obstetric surgery. The past year has witnessed a great improvement in this direction; in fact, now that a reaction has set in the tendency will be toward the opposite extreme. While we should not encourage "the doing of evil that good may come," the operative craze from which individuals perhaps suffered, was productive of great good by offering an opportunity to analyze symptoms in connection with diseases of the pelvis, and thereby elicit much invaluable knowledge which otherwise must forever have lain hidden from view.

If all would adopt the principle that the *éclat* of immediate results should never cause a sacrifice of a careful analysis, nor of an exact determination of the diagnosis and prognosis, we would seldom fail to have a proper interpretation of the indications in each given case and thus relieve us of all anxiety for the future. There are now and will be, no doubt for a long time at least, many mooted points with regard to operative procedure. The difficulties will by and by be eliminated, and while other nations with pardonable pride boast of their great erudition, scientific lineage and great masters in surgical technique, may we not confidently hope that with his independence of character, high aims, noble purposes and exalted ambition, his natural tact, talent, energy, skill and genius, the American surgeon will do his full share in satisfactorily solving these intricate problems? Looking forward to the highest possible attainments we must be careful not to be stranded by misdirected zeal. The tendency to drift into ultra radicalism on the one hand, and radical conservatism on the other, must be guarded against. Personal ambition must remain secondary to the great purpose to be accomplished, personal animosities and jealousies must be covered up and professional harmony and unity of action sought for. While we should give proper honor and respect to the beacon lights in the profession, there should be no want of activity in personally searching for new truths, nor should there be an undue subserviency to the principles enunciated by those whom we delight to honor. Independence of thought and action is not inconsistent with love and friendship for, and fealty to our honored masters, and will best subserve us in attaining that high degree of excellence I trust we all so fondly hope for.

### CANCER OF THE UTERUS.

Few diseases are more prevalent than cancer of the uterus, and none was formerly more universally fatal. There is now a very general consensus of opinion that it is a disease of local origin, and not as formerly supposed a general disease with a local manifestation. In 474 hysterectomies at the hands of five different operators, there was a primary mortality of only 8.4 per cent., and at the end of two years of 56.25 per cent.; of eighty-two vaginal hysterectomies done by Leopold, the patients were living without a recurrence of the disease. Such statistics as these supported by a vast array of others almost equally convincing, justify us in stamping hysterectomy for uterine cancer as a legitimate operation, and the disease for which it is done a curable one. A case in which the disease has invaded the parametrium is incurable and therefore not an operable one. The fact that near 90 per cent. of the cases presenting at our clinics are inoperable is very significant, and suggests to us that the most important question in the whole matter to-day is the early diagnosis. The weighty responsibility here rests upon the general practitioner. I feel, therefore, that I should be remiss in my duty at this time if I did not call particular attention to the subject, and urge in the most emphatic manner upon the general practitioner the necessity of his thoroughly familiarizing himself with the early manifestations of this dread enemy of womankind.

### THE GYNECOLOGICAL TREATMENT OF THE INSANE.

One of the most important of the live topics during the year has been the gynecological treatment of the insane. I will not insult the dignity and intelligence, nor impugn the motives of the members of the profession who are specially interested in this work, by offering an apology for any attempt on their part to invade the asylums for the insane, with the purpose of promiscuously spaying by the wholesale for the cure of insanity. That such an idea was ever entertained seriously by any one I can not think. Such a course would be so ridiculous, and so preposterous that we can scarcely understand how some of the "boards of control" and even a few of our medical journals seemingly entertained this untenable notion of the intention of those advocating the gynecological treatment of the insane. Their position can only be explained on the ground of a misapprehension of the facts. Certainly, no one has yet sufficient favorable data to justify him in becoming an enthusiast upon the cure of insanity by a resort to oöphorectomy. The intimate relationship, however, existing between the brain and generative organs would rationally lead us to infer that in women predisposed to insanity disease of the latter might be an exciting, if not a direct cause of mental alienation in some cases. That this inference is not purely theoretical and without foundation in practice, we have absolute proof in the results of a number of the operative procedures undertaken only after the most painstaking investigation by Joseph Price, Alice Bennett, W. P. Manton, J. B. Murdoch, Geo. H. Rohé, C. C. Hersman and a number of others whose integrity and ability are patent to all. How rich a harvest might await us in this vast, interesting and complicated field if properly cultivated I do not pretend to say. The grand object to be accomplished we think justifies us in asking that proper facilities for investigation be afforded those competent to do the work. Of course whatever is done should be with the greatest circumspection. Those who undertake it must remember that they have ignorance on the one hand and prejudice on the other to contend with. 'Tis' said, you know, and truly too, "Prejudice and Ignorance are tough combatants who too often push large minded Ability into the ditch." Aside from any specific operation for the cure of insanity, there is another phase to the question which I feel imperatively demands the unequivocal support of this Section. I refer to operations for the relief of physical suffering among insane women. It is unnecessary for me to occupy time by entering into an argument and citing statistics and clinical facts to prove to you a fact you are all familiar with, that a very large proportion of the insane women in our hospitals are the victims of disease of the uterus and annexa or of both. In consequence they suffer physical pain to a greater or less extent; some of them we have reason to believe suffer untold agony and thus increase their mental anguish. Insanity is not a panacea for pain. Insane women are just as susceptible to, and suffer as much from it, as the sane. In view of this fact does not humanity demand that they at least be given the same chance for relief that is given to their more fortunate sisters, who mentally sound are subjects of the same bodily affliction? Are these poor women to be compelled, in this enlightened age, to forego all the benefits to be derived from a scientific treatment of their ailments, and to be condemned to suffer on and on without any effort being made to mitigate their physical pains? In the name of God and humanity, I appeal to you and to an intelligent public and ask you is it right, is it just, is it Christian-like, is it human? A prominent attorney connected with the board of one of our asylums has said, "We have no legal right to mutilate an insane woman by the removal of her ovaries," and that "a woman recovering her reason finding that she has been so mutilated, might have recourse to law in a suit for damages against the physician who had operated on her." This may be good law and I have no doubt it is, coming as it does from such eminent authority. I have doubts, however, about its justice. I believe that society has some rights in law which are above and beyond the rights of the individual, and I want to say just here on my own responsibility, not as the exponent of the opinions of this Section, that it is extremely doubtful if it is not a crime against society to permit any man or woman who has been a sufferer from chronic insanity to procreate the species, and thus run the grave risk of adding to our insane population, or to the hordes of criminals who infest society. This leads us to say that as the conservators of the physical welfare of the human race, it is our duty to call attention to the disastrous results of illy advised and incompatible marriages; to the necessity of the copulative act being performed only during the best possible physical and mental condition of both the prospective father and mother.

### CRIMINAL ABORTIONS.

The alarming increase in the number of criminal abortions with all the physical, moral and social evil it entails is a subject which demands the serious attention of the profession, of moralists and humanitarians. It has been suggested that in order to reduce the physical wrongs engendered by the performance of this operation by irresponsible incompetents, that the regular profession engage in it in a scientific manner.

Let the blush of shame mantle the cheeks of those who suggest this prostitution of our noble profession in the furtherance of such a pernicious crime against God and society. As a profession we have no right to assume the position of lukewarmness and of masterly inactivity in this matter. It is our duty to be aggressive and as far as in our power educate the public up to a thorough appreciation of the pernicious results of this evil. Whenever opportunity offers to detect in this fiendish work those whose names blacken the lists of our profession we should see that they are stamped as villains, and as speedily as possible brought to justice.

### PUBEOTOMY.

The revival of pubeotomy with results far more favorable than the fondest expectations of its most sanguine supporters led them to hope for, bids fair to revolutionize some of the operative procedures in obstetric practice. If the present satisfactory results are maintained, embryotomy will be relegated to history, and the earnest pleadings on behalf of the relative rights of the mother and of the child will no longer be heard on the floor of the medical associations, nor occupy prominent space in the journals. It is yet too early to make any radical assertions, but the probabilities are that all will lay down their past differences upon craniotomy and embrace an operation which is more humane, inasmuch as it gives every possible chance to the child and does not increase the danger to the mother. Pubeotomy is not applicable to all cases of deformed pelvis; we do not hope without good reason, however, that it will be efficacious in all cases in which craniotomy could have been performed with a reasonable degree of success. It will also be proper in all cases where delivery could have been procured by producing premature birth at the seventh month. It will not therefore only supplant embryotomy, and the necessity for the production of premature delivery, but within the same limits of pelvic contraction also do away with the more hazardous operation of cæsarean section in the hands of those who elect to save the child.

### PLACENTA PRÆVIA.

The work of the past year has shown the utter absurdity of assuming the position of watchful expectancy in placenta prævia. To those who have been watching the trend of events I need offer no arguments to sustain the position that placenta prævia should be considered as a malignant condition, and should receive early and prompt treatment while the physician is in a position to control rather than be controlled by events. The method generally adopted is dilatation and delivery per *vias naturales*—but cæsarean section is now being warmly advocated by some men as giving greater chance to both mother and child. Time and experience will have to determine which method is productive of the best results.

### PUERPERAL INFECTION.

The reports of the year from the hospitals in our own and foreign countries show a very gratifying result so far as deaths from puerperal infection are concerned. In scarcely any does the death rate go above 2½ per cent. and in some it is *nil.* I have no means of gathering general statistics from private practice, and have only been able to get the isolated statistics of a few cities and of a few general practitioners, which justifies me in saying that the rate of mortality from this cause is much higher in general than in hospital practice. It is only a few years since the very converse of this was was true. Why is this? Need I stop to say that it is because of the hospital practice of to-day being the more scientific? This opens up a wide field for thought, and should stimulate the general practitioner to greater efforts as far as possible toward the institution of strictly scientific midwifery in private practice. It may be impossible with the disadvantages of untrained nurses and environments over which we have no control to obtain as good results in private as in hospital practice. With the education of the laity upon the necessity of sepsis and good hygienic surroundings, the employment of trained nurses when possible, and the adoption on our own part of all possible precautions against infection, we could at least approximate the high standard set us by the hospitals. There are many more subjects to which I might refer. Among those of which I more particularly wished to speak were: The danger from and uselessness of curettage in many of the diseases of the pelvic viscera; the necessity of calling architects to our aid to secure the construction of sick rooms in our homes which would meet the demands of modern surgery and therapy; exploratory abdominal incisions are not free from danger and should be made with great circumspection; the significance of puerperine in the kidney (discovered by Brown-Séquard); the proper application of the terms, laparotomy and cœliotomy (Harris); the aseptic treatment of the umbilicus in the newborn, a preventive of trismus and other diseases of the child; the communi bacillus, a factor in auto-infection in the puerperal woman especially in connection with suppurative hemorrhoids; the septic cord a cause of infection of the mother; the necessity of the systematic care of pregnant women; pelvic troubles due to movable kidney (Theiran). All of these topics are sufficiently suggestive.

In the selection of our program, however, we have endeavored to have all the leading subjects represented. Without taking up more of your valuable time and with the earnest hope that our meeting may be harmonious, that new and warm friendships may be formed, that old ones will be more firmly cemented, and that the work of the Section will be of such high order that it will be an enduring monument to the memory of those composing the Columbian meeting of the Association, I now declare the Section open for the transaction of business.

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**Dr. J. B. Moffett,** for more than thirteen years a resident of Minneapolis, died at Minneapolis recently. He had been in failing health for more than a year, and was finally carried away by an attack of congestion of the brain.

Deceased was a native of Kentucky, where, in Bath county, he was born Dec. 4, 1820. He was graduated from Rush Medical College, Chicago, and removing from Kentucky located for the practice of his profession in Iowa county, Wis., in 1846. There he practiced medicine and surgery until 1880, when he removed to Minneapolis in the fall of that year. In 1884 he discontinued active practice, and has since lived quietly, devoted to his family and to Masonry. In this he was a Sir Knight, member of Zion Commandery. He leaves a widow and seven children.

# ORIGINAL ARTICLES.

## THE PRESENT STATUS OF THORACIC SURGERY.

Read in the Section on Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

BY J. McFADDEN GASTON, M.D.

ATLANTA, GA.

In comparing the conditions of surgical resources of former days with the operative measures adopted within the last decade, we can recognize the great advances made in surgery of the chest. It is to be noted, however, that many procedures are yet *sub judice*, and that the appliances that some have resorted to are not to be considered as established processes of relief for troubles in the thoracic cavity. Decided progress has been made in curative measures, yet there is much to be accomplished in fixing finally the rules which shall govern the surgeon in treating the disorders of the chest.

Those who have kept abreast of the literature of thoracic surgery will not be taken by surprise when it is stated that even the mode of dealing with wounds of the parietes of the chest is a mooted point. While the weight of authority is favorable to closing incised or gunshot wounds of the walls of the thorax, there are advocates for laying open freely all the parietal structures in traumatic injuries of the chest walls attended with internal hemorrhage. The statistical records in favor of masterly inactivity in the treatment of foreign bodies in the air passages, is gradually giving way to active interference. Yet the experimental observations upon the results of operations for reaching the bronchial tubes directly through the walls of the thorax, afford little encouragement for these heroic procedures. It doth not yet appear what is to be the fate of early aspiration in serous pleural effusions, as a reaction has manifested itself in favor of medication, bloodletting and blisters in these cases.

A plea for early removal of pleuritic effusion is presented by Gardinier, not waiting for the subsidence of fever or the eliminating power of drugs. In twenty cases under his care within five years, all except two have done well under this course of treatment by early aspiration. A salutary result of aspiration is reported by Ernest Anacker and also by E. M. Jenkins. A case of chronic hydrothorax is reported by H. F. Twitchell, in which repeated aspirations and injections of tincture of iodin into the pleural cavity were attended with a satisfactory result. Two cases are described by J. H. Cox, one being aspirated with good effect, and the other from neglect of this procedure terminated in pointing and spontaneous discharge through the chest wall about the seventh interspace. This was followed by a second pointing a month later about the fourth interspace. There was an average discharge of one quart a day for eight months of thick, creamy pus, but in a year afterward this had entirely ceased. This case affords an illustration of the unaided power of nature.

The treatment of a case of pleuritic effusion by continuous drainage is reported by Baskett.

Aspiration was at first performed in a middle-aged man, drawing off forty-four ounces of serous fluid, and it was repeated seven times, the amount varying from two to six pints. It was then determined to employ continuous drainage, and an incision was made in the fifth space in front of the axilla and a drainage tube was left in the opening. The discharge was very great, with expansion of the lung, and the breathing could be heard. The fluid became purulent in the course of three weeks, but gradually diminished and in four months the discharge ceased. The wound finally healed and the patient was soon restored to health.

This is a unique case in the departure from the ordinary course of treatment for serous effusion in the cavity of the pleura; and it will be noted that the collection assumed the character of empyema, as it is prone to do after repeated aspirations and subsequent closure of the opening into the cavity.

In hydrothorax, Anders draws attention to the change in the upper limit of dullness due to the position of the patient, as the physical sign of most importance in diagnosis.

He reports the case of a man aged 66 years from whose chest sixty ounces, seventy ounces and eighty ounces of fluid were withdrawn by aspiration at different times with decided improvement. He gives another case in which the diagnosis was confirmed by the use of the hypodermatic needle and the patient was treated successfully by the internal use of the so-called iodides. He states that in nearly every instance in which the double iodides have been used, thoracentesis has been unnecessary. Active medication in the outset of pleural effusion is urged by J. C. Thorowgood of London, noting that rapid absorption followed the use of salicylate of sodium in seventeen out of twenty-seven cases. Lindsay has relied upon counter-irritation and iodide of potassium, with the addition of the ammonio-citrate of iron, in the early stages, but aspirates if the effusion is large.

All concur in removing large accumulations of fluid after various modes of internal treatment have failed to give relief; yet the conditions for this procedure, in the view of many having ample experience, indicate an apprehension of consequences which may be averted by energetic measures of treatment by medication at the outset.

The development of pneumothorax, either spontaneously or from traumatism, has been met by two distinct processes, one being by aspiration of the chest, so as to take away the superfluous air, and the other by the introduction of the innocent solution of boric acid or chloride of sodium by a canula while another alongside of it allows the air to escape from the thoracic cavity. Thus the space previously occupied with air will be filled with the fluid to be removed by syphonage or which in due course of time is absorbed. Of course perforations of the lung will be reduced in size by the partial collapse from the outside pressure of the fluids.

Hodenpyl recently presented to the New York Pathological Society two specimens of perforation of the lung, followed in a very short time by death. On opening the right side of the chest at the autopsy of one of the cases, gas escaped. About the middle of the upper lobe a circular perforation one-eighth inch in diameter was found in the pulmonary covering. The entire lung was consolidated and studded with tubercular nodules and there were cavities in the upper lobe. The other patient had been ill for a year and confined to bed for the past two months, yet was engaged in sweeping just before the perforation occurred, and died within a brief period afterwards.

If pneumothorax occur into the relatively sound lung, Fagge claims that its occurrence is apt to be marked by severe symptoms and death speedily follows, but that if the pneumothorax occurs on the side which is the more extensively diseased, the symptoms may not be urgent, and death does not occur speedily or the patient may recover.

Amongst the complications of phthisis, none gives greater concern than pneumothorax, which Samuel West shows to be attended with a mortality of 66 per cent. Sutherland gives the case of a man 32 years old which illustrates the advantages of aspiration. It was resolved to puncture the chest, and air was at once heard to pass into the bottle, and a considerable quantity of air was removed from the pleural cavity, with manifest improvement. On the following evening, aspiration being again performed, at first only air was withdrawn, then air mixed with fluid, and finally nine ounces of clear fluid were evacuated. At the end of a month thirty-four ounces of clear fluid were withdrawn. He then improved rapidly and afterwards continued in good health. The spontaneous cure of traumatic pneumothorax is reported by Bowes, in a man 36 years old. After a fracture of the eighth rib pneumothorax appeared, but next morning there were no traces of it, and the man recovered without any further complications.

In regard to surgical steps for extraction of bodies in the bronchi it may be noted that Buck, in a case where the patient had inhaled the distal portion of a tracheotomy tube, did a low tracheotomy. He was able to feel the tube with his finger, lodged in the left bronchus, and extracted it with suitable forceps. Weir had a patient with a piece of broken tooth lodged in a bronchus, for which he made an opening low down in the trachea. He was enabled to feel the division of the bronchi, and by means of a bent copper wire loop the tooth was dislodged and then extracted with an angular forceps. A most fortunate result of opening freely the lower part of the trachea was the extraction by J. W. Strickler of a plug of gauze from the bronchus when the patient was almost asphyxiated. A tracheotomy had been done for membranous croup with the insertion of a tube, when a piece of iodoform gauze which was used for cleansing out the trachea became detached from the probang and passed into the left bronchus. After dividing the skin down to the sternum the trachea was opened to the bifurcation, and the plug extracted.

On the other side of the question De Forrest Willard's experiments militate against the operation through the chest wall for the removal of foreign bodies impacted in the bronchi. His experiments on dogs thus far tend to prove: 1. That collapse of the lung on opening the thorax, when the lung has not been crippled by disease, is an exceedingly serious and dangerous element, adding greatly to the previous shock and threatening at once to overpower the patient. 2. The difficulties of reaching the bronchus, especially upon the left side, are very great and the risk of hemorrhage enormous. 3. Incision into the bronchus necessarily leads, after closure of the chest wound, to increasing pneumothorax with its subsequent dangers. 4. The delays in the operation from the collapse of the patient must necessarily be great. Rapid work is impossible when the root of the lung is being dragged backward and forward at least half an inch in the efforts occasioned by air-hunger, and precision is almost impossible. 5. To reach the bronchus is feasible, but to extract a foreign body is highly problematical for securing recovery.

Hydatids of the lung have come under surgical treatment somewhat frequently of late, and the outcome of operations for hydatid cysts by thoracotomy and pneumotomy gives encouragement to these procedures.

Independent of the observations upon cases of various kinds in human subjects, extended investigations have been made by experiments upon inferior animals which are calculated to shed some light upon thoracic surgery. Among these may be noted the experiments in pneumotomy and pneumonectomy, with suturing of lung, by Dr. De Forrest Willard of Philadelphia, which have been reported in full, but my space only admits of giving the results.

1. In thoracotomy and in bronchotomy the entrance of air into the pleural cavity is a far more serious matter, as regards the collapse of the lung and of the patient, when the lung tissue is normal, than when it is diseased or already crippled. 2. Incision into the substance of the lung, with removal of a portion, is well borne by dogs. Hemorrhage, though free, is not fatal, and can be arrested by packing. 3. Adhesion of the parietal and visceral layers can be readily obtained by sutures, and the resulting pleurisy is slight. 4. Surgically, these experiments point out that similar adhesive inflammation can be secured and thus permit safe incisions into tubercular or other diseased lung tissue, without infection of the pleural cavity. 5. A lung can be drawn into the wound and sutured outside of the pleural cavity. Pneumonectomy for gangrene or abscess of the lung offers better results than is possible in cases not treated surgically.

Some developments in the topography of the fissures of the lung, as a guide to transcostal openings, have been made by Eugene Rochard of Paris, which ought to aid in the treatment of abscess of the lung and interlobular pleurisies. His paper is illustrated by fifteen figures, showing these fissures under varying conditions in the dead subject and also the average tract of the interlobular fissures in the skeleton, including the fifth and sixth ribs.

In selecting a point for the introduction of a trocar in the anterior portion of the thorax, Jacoud of Paris considers that the region of Traubé on the lower part of the left side, of a semi-lunar shape, is the most favorable for puncture. It is the site which is least liable to complications with the diaphragm, pleura and abdominal wall, and there is less risk of encountering adhesions than in any other portion of the anterior region of the chest.

He finds it above the fifth or sixth left costal cartilage, extending backward to the anterior extremity of the ninth or tenth rib. A trocar may be safely introduced on the posterior aspect of the chest, as low down as the eighth intercostal space, but if inserted on a lower line is likely to enter the abdominal cavity; and an incision has actually been thus made between the diaphragm and the liver, which had to be closed by sutures before making one above.

In the various operations upon the cavity of the thorax there has been quite a marked diversity of opinions and a difference in practice as to the subsequent washing out of the pleura. While some have resorted to free irrigation and even to the use of medicated solutions, with apparent benefit, others have found these measures hurtful; and a considerable number of operators do not employ interpleural washes except in cases of contamination requiring correction.

On the other hand, some cases have been recently reported by Laplace in which the pleural cavity has been packed with gauze from day to day, with the claim that it contributes to the comfort of the patient and promotes the filling up of the space by granulations springing from the pleura.

As an intermediate step, semifluid substances, such as iodoform with glycerin, have been deposited in the pleura for the relief of tubercular degeneration with satisfactory results.

This general review of the different phases of thoracic surgery will not be complete without some details of the operative measures in each department.

In wounds of the thorax accompanied with internal hemorrhage, Axford has insisted upon free incision of the thoracic wall for the removal of the blood. But admits that he would not recommend this procedure in all cases, considering only those suited to it, in which there were immediate indications of copious bleeding and risk afterwards of decomposition of the blood mixed with air in the pleural cavity. Touching this position, Schmidt held that free incisions would produce an open pneumothorax, as only in cases having the lung wounded is this course proposed. He thinks that the favorable effect of the blood pressure upon the lung would be lost by removing it. The course adopted in most of these cases is to allow the blood to flow out, by placing the wound in a dependent position, and then close the opening by suture.

In gunshot wounds of the chest, Gehrmann enjoins that the margins of the skin are to be cut smooth and stitches introduced. Albert says there is but one rational means of closing wounds of the thorax and that is by suture. Hemorrhage is immediately stopped and infection from the skin is avoided by the rapid union of the co-aptated margins of the wound. The extent of the injury is known by the anatomical relations and by physical examination of the patient, and not by probing the cavity.

A case is reported by McClintock of gunshot wound of the thorax in a young lady and the cavity of the pleura was two-thirds full of blood. The use of occlusive dressings for the two bullet wounds secured union without suppuration, and an examination five months afterwards showed that the patient was perfectly well and there was no dullness over the region formerly filled with blood.

The literature pertaining to gunshot and incised wounds of the chest, affords numerous illustrations of the advantages of hermetically closing the openings.

A few years ago it was thought that a most desirable consummation had been reached by Estlander's operation in empyema, but to-day serious misgivings are entertained by the conservative surgeons of America and in Europe as to its applicability, except in extremely rebellious fistulous openings of the thorax.

The employment of efficient drainage, with or without resection of a small portion of a single rib, is held by many of the most experienced operators to meet all the needs of purulent collections in the pleural cavity, and that more extended resection of the ribs should be limited to abscess or gangrene of the parenchymatous structure of the lungs.

A recent departure from the established routine has come to the front in the amputation of small segments of the lung, when unfitted for performing their functions. But the few cases in which this operation has been performed affords no criterion for deciding upon the merits of this bold procedure.

In connection with the heart and pericardium Koerte describes a case of pericarditis with exudation, in which a puncture was made in the fifth intercostal space.

After resection of two inches of the fifth rib the pericardium was opened and about a quart of thin, purulent fluid was evacuated. Upon enlarging the opening, the cardiac movements could be distinctly seen, and the organ bore the washing out and disinfection without any marked disturbance. A case of hemorrhagic pericarditis, with serous effusion in the right pleura, is reported by Churton, in which he performed aspiration of the pericardium thirteen times and paracentisis of pleura seven times. The patient survived more than a year.

A needle was extracted from the pericardium of a boy 15 years old by Dziembowski and improvement followed without any complications. The murmur connected with the heart's action, which could be heard at some distance from the chest, disappeared immediately.

The invasion of the pericardium by the surgeon, not simply by puncture, but by free incision and the use of drainage tubes in the sac, promises satisfactory results, and has well nigh attained a place among the established processes in surgery.

A field of great interest, which has to be entered with much precaution, is that of the mediastinum, and though abscesses in this region have found spontaneous outlets with relief to the patients, there has little thus far been accomplished for the removal of tumors from this region. The graphic accounts of such neoplasms have been furnished by autopsies, and only a rare instance of the removal of a mediastinal tumor during life has thus far been reported. The initiative spirit of aggressive surgery, will no doubt inspire some intrepid explorer to penetrate this dark domain of disease, and we expect at no distant day to hear of important discoveries in this region, which may be yet crowned with good results.

A bold procedure for reaching the posterior mediastinum has been undertaken by Quenu and Hartman. A vertical incision, six inches long over the angles of the ribs, between the spinal border of the scapula and the vertebral column, about four fingers' breadth from the spine, is made so that the middle of the incision corresponds to the spine of the scapula. The ribs are then divided and resected for about an inch. The small resection of three ribs permits the hand to penetrate into the posterior mediastinum by stripping off the pleura. The opening in the thoracic wall extends from the inferior border of the second rib to the superior border of the sixth. By retraction of the ribs it is possible to see and explore the hilum of the lung, the aorta and that portion of the œsophagus which extends from the root of the bronchus to the diaphragm.

If the pleura instead of being stripped off is incised, the upper lobe of the lung and even the summit of the thoracic cavity are easily accessible, and the authors claim that it is better to approach the mediastinum from the left side than from the right. Weir has recently repeated this operation on the cadaver and found that the left bronchus could be easily reached.

Quenu and Wagner adopted a process of separating the ribs by lateral section and making an incision through the soft parts on either side and below, while the upper line of attachment is left undisturbed.

Thus a kind of trap door is made into the thorax, admitting of observations of the contents and the employment of any mode of procedure which may be indicated.

While Estlander made the original suggestion, Quenu first performed the operation.

G. Richelot has since peformed it on the 16th of March, 1891, affording relief in an extensive empyema, giving full credit to Quenu by styling the operation, Quenu-thoracoplastie. Moreau performed the same operation three times subsequently.

Delorme of Paris, in reporting recently a substitute for Estlander's operation, seems to have ignored the work of Quenu and others in the same line, and adopted a procedure upon the same principle, with a modification, which presents no superiority in practice.

The process described by Delorme consists essentially in the formation of a flap from the soft parts of the thoracic wall and the ribs, which when retracted, affords wide access to the field of operation. After the completion of the operation the flap is replaced and sutured to the thoracic wall. The flap is formed as follows: an incision, representing the three sides of a rectangle, is made in the region between the third and sixth ribs. The base of the flap thus formed is directed posteriorly and above, and its upper and lower margins run parallel with the ribs, and extend from the axillary border of the scapula to within two fingers' breadth of the sternum, At the anterior margin of this flap, the ribs and intercostal muscles are severed, while at the posterior margin only the ribs are divided to a limited extent. The flap is then loosened at its upper and lower margins and thrown back. This operation has been employed by Delorme in tubercular abscess of the chest wall, which perforated into the thoracic cavity.

Following in the wake of Zackharevitch, whose experiments of thoracotomy resulted fatally in only two out thirteen operations performed on nine rabbits, W. Lemoyne Wills of Los Angeles, has experimented on twenty rabbits, making twenty-seven operations, as follows: ten pneumonectomies, three thoracotomies, four attempted pneumonectomies with lacerations of lung, and chest packed with gauze; eight sutures of lung, three primary operations and five secondary; one pneumonotomy.

Apart from one death, caused by the anæsthetics, and two from shock within one hour, there were few fatal results following directly from the several operations. In giving the average duration of life, including those killed for verifying effects, the time in pneumonectomies is thirty-two and one-third days; in attempted pneumonectomy twenty-seven and seven-one-hundredths days; in thoracotomy forty-four and two-thirds days; in suture of lung to chest wall, primary operations forty four and two-thirds days; secondary fourteen and three-fifths days.

The author remarks upon these cases, with evident, satisfaction: "If the results are as good as this in rabbits, how much more can be expected in man, by intelligent coöperation?"

We cannot as yet give a satisfactory reply to this question. But it is demonstrated by clinical observation upon the human subject that diseased structures of the chest, as in other parts of the physical organism, are more tolerant of surgical interference than in traumatism of the contents of the thorax in their normal condition. It is therefore inferred that the operation upon the thoracic walls and upon the tissues of the lung under abnormal conditions which are indicated, will be warranted in all such cases as have proved safe in the experiments upon dogs and rabbits.

On the other hand it is not a necessary consequence that operations upon the diseased structures of the chest in the human subject shall prove hazardous, because experiments on inferior animals in a healthy state have been unsatisfactory or have turned out unfavorably.

A considerable portion of the data here presented has been the result of my collection of materials for the department of thoracic surgery in the *Annual of the Universal Medical Sciences* during the past four years, and I would refer all who may be interested in this matter to my contributions in Vol. III of each issue, for all details, with the report of numerous illustrative cases under each head of thoracic disorders. Attention is directed especially to the forthcoming issue of the *Annual* for the current year.

It will be found that there are facts presented which lead to different conclusions, and that the practice in like cases has varied widely. But the student who seeks guidance from the experience of others must exercise his judgment in selecting the safest and best plan of treatment after comparing the results obtained by different observers in each case.

The following general inferences may be drawn from the facts:

1. All penetrating wounds of the thorax may be closed hermetically, by suture or otherwise, after allowing the discharge of fluid blood from the opening.
2. Foreign bodies lodged in the bronchi may be removed by incision of the trachea at the lowest available point.
3. Experiments for reaching the bronchi through the chest wall, afford little encouragement in undertaking operation upon the human subject.
4. Medication as a preventive and a curative agency in pleuritic effusion is worthy of trial, before proceeding to the recourse of aspiration.
5. Aspiration is indicated when there are large serous accumulations in the chest and likewise in pneumothorax, but cannot be relied upon for the relief of purulent collections.
6. Partial resection of ribs is attended with better results in some cases of empyema than the complete removal of the segments of several ribs.
7. The excision of a small portion of one rib with the introduction of drainage tubes has been generally attended with good results.
8. Washing out the cavity of the chest is not requisite, except in contamination and decomposition of the contents.
9. The operation of thoracotomy for abscess and gangrene of the lung, should be accompanied with antiseptic applications and with tamponage gauze.
10. Tumors of the mediastinum may admit of interference, but further developments are requisite.

## ARTIFICIAL OPENING OF PULMONARY CAVITIES, INSERTION OF RUBBER TUBE AND INJECTION OF CHLORINE GAS.

*Read before the Section of Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.*

BY E. L. SHURLY, M.D.

DETROIT, MICH.

*Mr. President and Gentlemen:*—Being a physician, I owe this assembly of surgeons an apology for appearing with a surgical paper. For I know full well that physicians, as a rule, are as incompetent in the practice of surgery as most surgeons are in the practice of medicine. Therefore it is with some hesitation that I venture to submit the following observations and remarks:

The surgery of the thoracic cavity, excepting for the opening of the pleural sac has been heretofore rather forbidden ground, because, as we know, fraught with so many imminent dangers to life. The possibility however, of doing something in a surgical way toward the mitigation or arrest of the course of disease in cases of pulmonary abscess, either benign or tuberculous has occurred to many during years past. As long ago as 1844 a large apex cavity was incised and a drainage tube inserted by Drs. Hastings and Stork. In 1873 Mossler tapped pulmonary cavities and injected iodized and other antiseptic solutions, and from time to time after this, Cayley, Godlee and others tapped such pulmonary cavities and injected iodized and other antiseptic fluids; again in 1879 Mr. Douglass Powell at Middlesex hospital in London. opened up pulmonary cavities and inserted a drainage tube. Since then such efforts have been made at long intervals but with indifferent results only. In later years attempts have been made to excise diseased portions of the lung but always with fatal effect I believe. This latter practice originated from the encouraging results obtained from several experiments made upon the lower animals, in which the thoracic cavity was opened freely, portions of the lung first ligated, and then excised, without producing the immediate death of the animal. It has been observed that nature once in awhile brings about a discharge externally of the contents of pulmonary cavities through the process of ulceration to the surface.

A notable case of this kind was recorded in 1843 in the London *Lancet*, occurring in a man who lived a number of years afterwards. Other cases of the sort have been reported from time to time, and similar results have been recorded in cases of pulmonary abscess in connection with pyopneumo-thorax and empyema.

For this reason it has for a long time been my conviction that we would be justified in applying our art in imitation of nature in order to bring about such results. However, the difficulties besetting the undertaking are not to be treated lightly; of which I will mention first the difficulty of determining with certainty the location of cavities, and the distinguishment of pulmonary excavations from locular collections in the pleura cavity, or of distinguishing bronchitetic cavities from others. I believe it well nigh impossible with certainty to determine the perspective, so to speak. of a pulmonary cavity; that is, whether it be a half inch, or two, or three inches from the surface with or without much intervening pulmonary parenchyma. And it will readily be seen that this is an important point, inasmuch as the cutting through pulmonary tissue in getting to a cavity, opens up two sources of danger; one from hemorrhage, and the other from infection by the contents of the cavity coming in contact with freshly incised surfaces of lung tissue, upon which are exposed open lymph vessels or spaces.

The immediate dangers from hemorrhage, shock and consequent septicemia are not to be overlooked in undertaking such operations, notwithstanding the protective influence afforded by the modern methods of aseptic surgery. Besides these we must not forget the consecutive accidents to the nervous system such as convulsions, chorea, paralysis, meningitis, etc., which frequently follow operations on the chest, according to Auboin, Cayley, Weil, M. Roupert and others. At the Congress on Tuberculosis of 1891, held in Paris, Paul Poirier and Jonnesco presented a valuable paper on the treatment of pulmonary cavities at the apex of the lung, by incision, drainage, and subsequent disinfection with antiseptic fluids. In this paper they reported twenty-nine cases of such operations having been made which resulted in the amelioration of the condition in fifteen cases, cure in four, immediate death in nine and one result not stated. Their method of procedure consisted in making free incisions, by preference at the second intercostal space (without resection of the rib) down to the pleura, and thence entering the cavity with the thermo-cautery knife. In the cases which I shall briefly present for your attention their method of operation was pretty closely adopted. Although the signal failure of these operations as hitherto recorded, would lead one to hesitate upon the adoption of such means, it occurs to me that the two great causes of failure may be traced to the use of the knife instead of the galvano-cautery or thermo-cautery for making the opening through the pleura and lung, and to the injection of fluids; while a third might be added, consisting of the opening into a free pleural cavity.

Dr. Gibbes and myself have demonstrated to our own satisfaction that chlorine gas is capable of entirely destroying the virulence of tubercle or caseous material whenever the same has been properly exposed to it. Therefore it occurred to me that this agent would be the most desirable one for introduction into a pulmonary cavity providing it could be tolerated; not only for its immediate local effect, but also because of its gaseous nature fitting it to reach not only all of the adjacent diseased parts, but possibly the remote parts of the lung, thus providing a complete plan of local aseptic medication. The question, therefore, would seem to hinge upon some practical method of its introduction. We know by experience that it requires persistent effort on the part of the patient to inhale a sufficient quantity by the natural way to even secure *a limited action* upon the caseous surfaces exposed to the inspiratory current, and that its introduction is resisted by the glottis. I therefore felt justified in testing its adaptability in this way as soon as opportunity offered. The method pursued in the cases that I shall briefly report was as follows:

After anæsthetization by chloroform, an incision with a bistoury was made parallel with the ribs at the second intercostal space from near the margin of the sternum for about two and a half inches carefully avoiding the internal mammary and intercostal arteries; then the muscles were divided by as little incision as possible down to the costal pleura. Having reached the surface of this membrane the bistoury was exchanged for the incandescent galvano-cautery knife with which the pleura and intervening lung tissue was divided, until the cavity was reached. Into the opening a drainage tube (which was previously flanged) and secured to a piece of lead plate or zinc was inserted, the tube being long enough to extend some distance above the surface. The end of this tube was afterwards closed with a plug of absorbent cotton, which was of course removed whenever the cavity was treated. The diluted chlorine gas was obtained by pumping air with a common rubber bulb through a Wolff bottle which had been previously half filled with freshly made chlorine water, and connected by a piece of glass tubing with the tube in the thorax. The air in passing through this becomes strongly impregnated with the gas; and twelve to fifteen bulbs-full can be introduced at a time, and repeated every two to four hours. Contrary to expectation this procedure produced very little uneasiness, and little or no cough. In fact its effect was quite comforting to the patient.

The first case in which chlorine[1] was tried, was a sailor, age 32, who was brought to Harper hospital Oct. 20th, 1892, having suffered from a severe pleuro-pneumonia, the result of a debauch and exposure. He was very sick for three or four weeks expectorating blood and rusty sputa; suffering from high temperature, rapid pulse and respiration; active delirium and progressive adynamia. He had complained constantly of a great deal of pain in the right side, which required the continual effects of morphine to alleviate. The high temperature, rapid pulse and delirium gradually abated, and on the first of December I was asked to examine him with his attending physician, Dr. Brown. The right pleural cavity was found flat on percussion throughout the lower two-thirds of its extent, and there was but little respiratory murmur at the upper part of the right side of the chest.

Over the fourth interspace and about three inches from the sternum it was discovered that air was passing from the lung into the pleural cavity. At least it could be heard distinctly, accompanied by mucous râles. Believing that nature had perforated the visceral pleura and that there was possibly ulceration of the costal pleura going on, we decided to make an opening just below the spot which was deemed by auscultation to be the seat of ulceration. The patient was carefully placed under the influence of chloroform and I made an opening with a bistoury in the lower axillary region, and inserted a drainage tube without resecting any of the rib. This was followed by the discharge of bloody pus *and sputum and subsequent amelioration of the* symptoms. We found that the pus from the pleural cavity was quite thick and thoroughly mixed with blood. He continued to discharge this material by coughing, both through the tube and by the mouth. An examination of the sputum on the 16th of December revealed tubercle bacilli, although none were found in the fluid from the pleural cavity. The drainage tube was left in continuously. He was next treated by chlorine gas diluted with air for a period of six weeks and the cavity washed out by peroxide of hydrogen (1 to 10) on two or three occasions.

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[1] Have since evacuated the pleural cavity of a collection of pus and opened the sinuses.

The patient suffered from persistent cough and the expectoration of bloody sputum for about three weeks,—although this was not caused by the gas. On account of the flowing of sputum into the general cellular tissue he suffered from a series of sub-cutaneous abscesses, five or six of which were opened; some of these were found to communicate with each other by sinuses. These sinuses were probed from time to time but no necrosed rib was found. The opening from the surface into the lung has now healed up. The man looks well, eats well, and breathes well. He walks about freely—going down town, and coughs very little, excepting in the morning. He takes no stimulant or anodyne. There is still, however, considerable discharge from a fistulous opening in the side of the chest near the point of the incision which has to be dressed twice a day.

This was undoubtedly a case of croupous pneumonia, with empyema, such as Dr. Godlee believes to occur more frequently than is generally recognized.

The man having survived the acute stages, nature evidently set about to make an opening for the pent up material.

By opening up the external parts, inserting a tube, and treating the condition as indicated, art simply assisted the accomplishment of nature's design.

The two cases which I am about to relate both died, and they were operated upon very much after the manner of Poirier and Jonnesco:

*Case 1.*—T. S., Canadian by birth, cook by occupation, married, aged 48. Entered Harper hospital Feb. 4th, 1892, suffering from phthisis pulmonalis, presenting the signs of a small excavation in the upper part of the left lung with considerable hepatization throughout that side.

He remained in the hospital until March 8th, during which time he was treated principally by hypodermic injections of iodin and chloride of gold and sodium and inhalations of chlorine gas. At the time of his discharge he was very much improved, the physical signs showing retrogression of the pulmonary disease. He was heard from occasionally after that as improving, and I believe resumed work, but was taken sick the latter part of November with what was supposed to be croupous pneumonia; and was brought to the hospital again in February of 1893. At this time he was very weak, emaciated, with several good sized cavities in the left lung, also one at the right apex. He suffered from marked hectic fever and considerable diarrhœa. He was treated systematically by various things and the disease for a time was held in abeyance. But later on he gradually lost flesh and strength, and was surely approaching the end. On March 15th, having obtained the patient's consent and that of his friends, I opened one of the cavities of the left lung through the second intercostal space in the manner already stated. The cavity sought for seemed to be quite superficial but was found to be at least two inches from the pleural surface, and cutting through the lung tissue even with the galvano-cautery knife, brought on considerable hemorrhage. The hemorrhage soon stopped, however, but after the insertion of the tube the patient seemed to collapse. We thought he would die on the table. However, hypodermic injections of stimulants were administered at once, and he soon rallied and was immediately taken to his bed wrapped up in hot woolen clothing, surrounded by hot bottles, while the hypodermic injections of stimulants—nitro-glycerin and digitalin, etc. were continued at short intervals until he completely reacted which took place in about an hour and a half. He then expressed himself as feeling very comfortable, in fact better than he had for "a long time." He stood the chlorine gas well, and seemed better, but died on the eighth day after the operation, from a sudden and very copious hemorrhage. On the evening of the 15th of March, the day of the operation, the cavity was drained through the tube, and the introduction of chlorine gas commenced in a manner before mentioned. Chlorine gas was used about every four hours, six to twelve bulb-fulls being introduced each time. He never complained of any pain and very little cough was excited by this procedure. He always expressed himself as feeling very comfortable after it. The cough almost entirely ceased; the cavities being drained out occasionally by turning him over to the right side.

The source of the hemorrhage which was the immediate cause of his death was probably the opening of a good sized pulmonary vessel. Whether this was caused by the mechanical irritation of the end of the tube, or the accidental rupture of some old aneurism can only be conjectured as a post-mortem examination unfortunately could not be obtained.

*Case 2.*—A. M., German, aged 27; tailor; lived in United States eleven years; both parents died of phthisis pulmonalis. He had suffered from cough for six years which he thought resulted from "a cold." Had had several attacks of hemoptysis with exacerbations of chills and fever on and off during this time. He was admitted to Harper hospital February 13th, very much emaciated and debilitated, scarcely able to be up and around the ward more than three or four hours a day.

For some time before his admission he had had constant high temperature, rapid pulse and a large amount of expectoration.

The physical signs showed a large anfractuous cavity possibly bronchiectatic at the upper left apex, with smaller cavities below this and in the lower portions of the lungs. The respiratory murmur at the former situation was purely tubular, and there was at all times well marked pectoriloquy. This large cavity seemed to be very near the external surface. Repeated examinations of sputum showed no tubercle bacilli.

He was placed for a time on a treatment by hypodermic injections of iodin and inhalations of chlorine gas, but showed no marked improvement, except a diminution of expectoration and pyrexia, so that he was rapidly failing and it was apparent would soon die. Now, as the location of the larger excavations seemed to be very favorable for operation I obtained his consent to do it, and on March 21st cut into the cavity at the left apex, through the third intercostal space in the manner previously detailed.

He took the anæsthetic very well, and the operation occupied but a few minutes. There was no hemorrhage at the time, and he maintained a tolerably good physical condition throughout. A tube was inserted immediately after the operation, and he was removed to his bed. The examination with the finger at the time showed the excavation to be large, tortuous and smoothly lined. This latter indication led us to doubt whether the cavity had really been reached or not, but by swinging the finger around it was felt to be limited or walled all around, so that, taken together with the fact that the two layers of pleura seemed to be adherent, according to the test given by Poirier, viz: (the ability to see the movement of the lung through the costal layer, and the immobility of the free end of a needle with which the pleural layer was transfixed just previous to the opening) we finally lost all doubt. Dr. H. O. Walker and Dr. P. M. Hickey who kindly assisted me at this time, shared with me the doubt for a time. Moreover the presence, just at the bottom of the excavation, of a good sized pulmonary artery which could be felt by the finger, rendered any further puncturing hazardous. The cavity was drained and treated as in the former case. The patient's cough ceased and for a week he seemed to be improving. But at this time he was taken with diarrhœa which became obstinate, and seemed to reduce his strength very fast. Coincident was this, there was a strong odor of skatol which could be observed at times emanating from the breath. Whether this came directly from the intestinal canal through the esophagus, or whether it resulted from some chemical reaction of the chlorine gas within the lungs, of course could not be determined. I simply mention it as an interesting observation. The diarrhœa continued with more or less violence despite all measures which we could adopt, and he died from exhaustion April 14th.

The temperature during the last week of his life ranged between 101° and 103½°. He complained of little or no pain, although after the first two or three days succeeding the operation he had very little morphia. The introduction of chlorine gas seemed to cause no irritation, but always a sense of relief and at no time after the operation did the expectoration amount to very much,—excepting, perhaps the three or four days before his death, when we removed the tube and stopped all except palliative medication. Perhaps if the operation could have been made earlier, this man might have survived a long time.

The foregoing cases, abstracts of which I have given, do not make a very good showing in advocacy of this plan of treatment I admit. But it must be remembered that they were hopeless cases whose courses were nearly run.

I hope to have an opportunity soon of repeating this method of treatment upon cases that are not so far advanced.

While the results of the treatment of the earlier stages of the several forms of phthisis pulmonalis, (exclusive of general tuberculosis) by the plan of hypodermic injections of iodin and chloride of gold and sodium have been all that could be expected, still in the many cases of advanced excavation and caseation in which all methods of medication seem to fail, it would seem imperative that we should seek new methods of treatment and especially ascertain whether or not surgical procedures will assist nature in staying the progress of this disease in this class of cases.

The particular points which I desire to urge upon your consideration, are, first, those made by Poirier and Jonnesco, viz: to open the cavity freely near the apex *without resecting ribs*, and to use the galvano-cautery knife for opening through the lung tissue; and second, the use of chlorine, ozone, bromin or some other antiseptic gas instead of a fluid for the local medication, for the latter it seems obvious can not be well tolerated by even diseased lung tissue outside of the cavity itself. Whereas with the use of a *gas* which is tolerable and capable of diffusion, we may hope to reach remotely diseased portions of lung which are in process of breaking down as well as to render the caseous material in and about the excavation more or less incapable of producing further infection. Another point to which I desire to call your attention before closing is the question of adhesion between the two pleural layers. It is plain that if the costal and visceral layers are not adherent, it is inadvisable to proceed further with the incision. Now whether the directions promulgated by Poirier and Jonnesco are infallable guides in all cases remains to be seen. However, I think that in the majority of instances all doubt will be dispelled by the insertion of a clean needle and the observation as to the mobility of its free end. I am not here to advocate surgical measures which would prove fatal in all cases, but I trust that the untoward events which I have here presented may lead some possessed of more surgical aptitude to initiate and perfect a better plan for the relief of these universally fatal cases.

### DISCUSSION UPON DRS. SHURLEY AND GASTON'S PAPERS.

**Dr. Dennison** of Colorado—Some experience which I have had in the past year may be of interest to the Section. Eight or nine months ago I had a case of a man who had been having for six or eight weeks recurring hemorrhages from the region of the left infra-clavicular space. All methods in vogue had been employed to stop it but without avail, when I adopted a simple method of bandaging. A collar was put around the right shoulder to act as a fulcrum and two bands were run around the body. Rubber adhesive straps were put on the chest, with all the air possible expired, and then drawn tighter and tighter. The hemorrhage stopped immediately, and I found to my gratification that within three months the large cavity had disappeared.

**Dr. Laplace** of Pennsylvania—Speaking of drainage of the chest, I would like to give a little of my own experience. I had a case of empyema from which I removed nearly a half gallon of pus, removed with a curette as much as I could of a thick pyogenic membrane and packed the cavity tightly with a quantity of sterilized gauze. That man never felt better in his life than he did after that operation. In regard to tumors of the mediastinum: About a month ago in Philadelphia a man came under my care who had an enormous tumor over the sternum. It was impossible to make out the nature of it and I determined upon making an exploration. This revealed it to be of a tuberculous appearance and I scraped away at it until there was a cavity as large as my fist into which I could put my hand and rest it upon the pericardium. I had in that case a tuberculous condition of the mediastinum—what might have been elsewhere in the body a cold abscess. I packed that cavity likewise as in the previous case, with a good result, and shall ultimately perform a plastic operation for the restoration of the part lost. There is no limit to that grand principle of surgery, the thorough widespread principle of drainage, the excision of that which ought not to remain, and the packing with something that has capillary properties.

**Dr. McComas** of Maryland—I had an interesting case of empyema five years ago in a man 25 years of age. I found, as I thought, an accumulation in the pleural cavity and aspirated, drawing off two pints of pus. I closed the wound and treated as we generally do these cases. Ten days later I aspirated again, removing six pints of pus this time, and then washed out the cavity with boiled water. Ten days later the pus had reaccumulated to such an extent that the liver was pushed down nearly to the iliac crest, the respiration was rapid and the patient cyanotic. I aspirated again and still again, making four times in all and having removed altogether twenty pints of pus. Later I had to remove the bandage on account of the pain which the patient experienced, and then washed out the cavity with tincture of iodin and water. That man is hearty and well to-day, although at first I thought I recognized him as a hopeless case.

**Dr. A. H. Ferguson** of Winnipeg—Some time ago I had a case of empyema in a child which was interesting to me. Repeated aspirations at the hands of the family physician had been made without good result before the case came into my hands. The trephining of a rib with drainage failed to close the cavity, and then I resected a rib and packed with antiseptic gauze. I performed a second and a third resection and continued the packing until finally the cavity closed up nicely. In another case in which I operated for the removal of a section of seven ribs and curetting, although the operation only took thirty minutes the patient died from shock with delirium.

**Dr. Whiting** of Wisconsin—I am not here to teach the leaders of surgery anything, but I want to call attention to the fact that when you put a tube into a hole you have done a bad thing. You have drained the hole and you haven't drained it. The drainage tube, in my judgment, is fraught with more destruction to life than anything I know of.

**Dr. Murphy** of Chicago—The lung expands by force of the contraction of the opposite lung. The belief is that when you open the pleural cavity the lung collapses. This is so in the dead subject but not in the living; it expands in expiration and collapses in inspiration.

**Dr. Dalton** of Missouri—Some time ago a young man 22 years of age entered a hospital at St. Louis with a stab wound in the right thorax in the second or third interspace, about an inch from the sternum. A large quantity of blood and froth escaped at every respiration and we considered him in no condition for surgical interference. Believing he would die unless the wound was enlarged and packed, a four inch vertical incision was made. The cartilages of three ribs were cut, and with the use of large retracting forceps we got a view of the right lung cut to the extent of one or two inches, bleeding freely and the right pleural cavity full of blood. I caught the edges of the wound in the lung together, drew them to the surface and closed with catgut, cleaned out the pleural cavity and sewed up the wound in the chest wall. The patient rallied from the operation, but died a few hours afterwards. I was glad to find upon post-mortem that the wound in the lung was perfectly closed.

Dr. Quimby of New Jersey—I wish to put an emphasis upon the importance of early incisions in pleural effusions. In three cases where I operated before the effusion became purulent I think my success with them was due to the fact that I operated early. Early incisions have a tendency to save the lung.

Dr. Shurly—I will add in regard to those cases where I opened the pulmonary cavity, those which were tuberculous died and those that were non-tuberculous lived. I object to the statement that every case of empyema is tuberculous

# SURGERY OF THE GALL BLADDER, CYSTIC AND COMMON DUCTS, WITH REPORT OF SEVEN CASES OPERATED UPON.

BY W. J. MAYO, M.D.

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*Mr. President and Members of the Southern Minnesota Medical Society:*—The rapid advance in abdominal surgery during the past ten years has brought the gall bladder into the field of operation, and in this time more definite knowledge in regard to its pathology and treatment has been gained than during the previous 160 years.

In 1733, Petit wrote the first of his classical essays, and during the succeeding ten years placed the pathology of gall bladder disease upon a sound basis far in advance of his time, but his work was little appreciated until recent years. With the anatomy of the gall bladder, its ducts and their relative position to the liver and duodenum, you are all familiar, and I will omit a description. The physiological function of the gall bladder is a mooted point—the commonly accepted belief is that it is a storehouse for bile to be discharged during digestion.

So late an authority as Landois and Stirling authorize this view. J. B. Murphy logically attacks this question, and as a result of experimental and practical study asserts that it has nearly the same function as the second bulb of a syringe in regulating the flow of bile, causing a steady stream rather than an intermittent current into the duodenum. Cholelithiasis is the most common pathological condition of the gall bladder for the relief of which surgery offers the only rational method. It is gratifying to us as Americans to see the important part played by our countrymen in this work, and to note that to Dr. Bobbs of Indianapolis, is due the credit of priority of performance of the modern operation in 1867. Gall stones, as a rule, are formed in the gall bladder itself as a result of precipitation and accretion. Under some circumstances stones are also found in the hepatic ducts, especially in cancerous obstruction. The diagnosis depends largely upon the history, character and location of the pain, and often physical examination will reveal a tumor in this region. Jaundice does not appear unless the common duct is obstructed and is far more common in malignant disease, and for the same reason the color of the stool, upon which much stress has been laid, is usually of small importance. The diagnostic value of the finding of gall stones passed with the stool is absolute, but I am inclined to think that such passage of gall stones is less common than generally thought, and certainly the onset, duration and cessation of a colic is no indication that a stone has been passed, but merely that the cystic duct has been obstructed and that either the obstruction has been removed or the bladder has exhausted itself in the effort. When olive oil in large quantities was a popular remedy for hepatic colic, the soap balls passed with the stool, and resulting from the action of the intestinal alkalies upon the oil were erroneously supposed to be the offending bodies, and as such exhibited to the sufferer and his admiring friends. At the present time we hear much less about stones found in the feces. While stones may be passed through the ducts, or by ulceration, into the intestine, externally, or into any neighboring viscus, or after causing years of suffering remain quiescent without producing further trouble, such fortunate outcome is very exceptional, and in the majority of instances operation is the only relief from a life of suffering or death from a complication. Septic infection of the gall bladder, either as a result of stones, or from extension upward through the ducts of a septic process is a not uncommon occurrence, and may result either in chronic inflammation or empyema. Fenger has done much to elucidate this subject.

Large accumulations in the gall bladder are not infrequently confounded with right renal tumors or even with ovarian cysts, and many such mistakes are recorded, especially when dropsy of the gall bladder exists with great retention of catarrhal products as a result of duct obstruction. Injuries of the gall bladder sometimes occur. Some years ago in the practice of my father I saw a case of undoubted rupture of the gall bladder. A boy 12 years of age was thrown from a wagon, the wheel passing partly on to the right side of the abdomen. Ascites developed and large quantities of thin bile were aspirated at different times during a month. Complete recovery took place. Operations upon the gall bladder may be divided into three general classes:

*First*, cholyecystotomy, or the simple opening and removal of stones. Following that master of abdominal surgery, Lawson Tait, this operation is usually done at one sitting and the open gall bladder stitched into the incision, forming a temporary fistula. As bile is not septic and does not cause peritonitis, other than the adhesive variety; slight biliary contamination of the peritoneum causes no harm, and this open method enables us to manipulate with the finger inside the abdomen, outside of the gall bladder, which at times is a great aid in extracting stones. It also allows the subsequent escape of overlooked stones. If the contents of the gall bladder be septic upon aspiration after the abdominal incision is made, it is far safer to stitch it into the incision and delay opening for several days until adhesive inflammation has shut it off from the general cavity.

Blind aspiration of the gall bladder has long been known to be of great danger; not, as supposed, on account of the escape of a few drops of bile, but

REPORT OF SEVEN OPERATIONS UPON THE GALL BLADDER OR ITS DUCTS.

| Number. Initials. Residence. | Nat. Age. Sex. | In Consultation with. | Date and Place of Operations. | History. | Examination. | Operation. | Result. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 1. E. B. B.,<br>Sleepy Eye,<br>Minn. | Am.<br>36<br>M. | Hospital Staff. | Dec. 2, 1890.<br>St. Mary's Hospital, Rochester. | Colics for several years; during last year continuous pain in right side. Has had to use morphia constantly. | Emaciated, sallow. Tumor in right hypogastrium. | Incision over tumor. Single stone. Gall bladder adherent. | R | Fistula closed in three weeks. |
| 2. F. L.,<br>St. Charles,<br>Minn. | Ger.<br>33<br>F. | Dr. Chamberlin,<br>St. Charles,<br>Minn. | June 24, 1891.<br>St. Mary's Hospital. | Colics began nine days after childbirth, two years ago. Constant pain and frequent colics. | Indefinite tumor, and great tenderness in right hypogastrium. | Incision in right semi-lunaris. One large stone impacted in cystic duct. | R | Great difficulty was experienced in dislodging stone. Fistula healed in two weeks. |
| 3. G. Z.,<br>Dover,<br>Minn. | Ger.<br>28<br>F. | Dr. Dugan,<br>Dover,<br>Minn. | Feb. 3, 1892.<br>St. Mary's Hospital. | Attacks of pain, with more or less jaundice during past year. Pain in pelvis. | Liver very large. Small tumor in pelvis. | Incision in R. S. No stone. Common duct blocked by adhesions which were torn loose. Incision in median line. Papillary cyst of ovary removed. | R | Patient improved greatly for six months. In nine months died from malignant papilloma of peritoneum. |
| *4. E. J. D.,<br>Quincy Mills,<br>Minn.* | *Am.*<br>36<br>F. | *Dr. Chamberlin,*<br>St. Charles,<br>Minn. | *Aug. 17, 1892.*<br>Home. | *Hepatic colic for* nineteen years. Two attacks of peritonitis. | *P* [illegible] acute obstruction. | [illegible] *bladder very adherent.* Peritonitis. [illegible] nety-six stones. | *D* | *Patient died in a few* hours. Operation lasted but twenty-five minutes. |
| 5. S. A. H.,<br>Plainview,<br>Minn. | Am.<br>57<br>F. | Dr. Waiste,<br>Plainview. | August 29, 1892.<br>St. Mary's Hospital. | Colics for seventeen years. Constant pain in right side. | Pain and tenderness in right hypogastrium. No tumor. | Incision in R. semilunaris. Gall bladder adherent. Fifty-six stones. Sutured to skin. | R | Fistula healed in four weeks. |
| 6. C. S.,<br>Potsdam,<br>Minn. | Ger.<br>56<br>F. | Dr. Adams,<br>Elgin, Minn. | Dec. 6, 1892.<br>St. Mary's Hospital. | Pain for six months. Tumor forming in right side two months. | Movable tumor in right hypogastrium. Empyema gall bladder. | Incision over tumor. ℥iv pus evacuated. Sutured and drain'd | R | Fistula healed in three weeks. |
| 7. W. H.,<br>Racine,<br>Minn. | Am.<br>71<br>M. | Dr. Plummer,<br>Hamilton,<br>Minn. | April 6, 1893.<br>St. Mary's Hospital. | Colics for two years. Jaundice for two months. | Great debility, cholæmia, white stools, etc. | Incision R. S. Bladder deep. No stone. Obstruction in common duct. Anastomosis by Murphy's button. | R | The bladder could not be brought to surface. Obstruction could not be removed. The Murphy button worked quickly, and relieved jaundice, etc. |

because of the contents being often septic and the slight leakage setting up septic peritonitis.

Suture of the gall bladder after opening and removal of stones is seldom practiced and the method is condemned as unsafe. This, however, is not logical—the whole question of safety depends on the patency of the ducts. If there be no obstruction to the outflow, so that there will be no tension within the sac, suture and return is a safe procedure. Abbé tests the condition of the ducts by using a syringe and forcing water through them into the intestine; if the fluid passes freely he does not hesitate to trust to immediate suture and return.

The second general class is where the gall bladder is removed. Langenbeck first practiced cholecystectomy and formulated indications for its performance; he gives much too wide a scope to this procedure, and Greig Smith very properly limits its application to single or double stone, where the fundus of the gall bladder can not be sutured to the abdominal wall, or to cases wherein the tissues are too thin or inflamed to bear a suture. It is mainly practiced by a few continental surgeons and is not a popular operation.

The third class is a very important and often perplexing one—wherein obstruction exists either in the cystic or common duct. To suture such a gall bladder to the abdominal walls is to invite a permanent fistula; in any case an annoyance, and if complete obstruction of the common duct exists the escape of *all the bile externally* leads to debility and eventually death. Fortunately, the recent work of Mr. J. Knowlsley Thornton, Mr. Mayo Robinson, Robert Abbé and Charles McBurney has given us methods of opening these ducts and removing stones with either suture of the incised duct or drainage. The latter distinguished surgeon has successfully opened the duodenum and shelled an impacted stone out of the intestinal orifice of the common duct. There will remain certain cases in which the obstruction in the ducts can not be removed, and in these cases entero-cholecystotomy is our only hope of success. Winiwater first sutured the gall bladder to the colon; while this was much better than an external fistula, yet most of the physiological effect of the bile in digestion was lost. Gaston of Georgia, by experiments upon dogs developed a complicated method of suture to the duodenum; but it remained for a brilliant young Western surgeon, J. B. Murphy, to invent his mechanical device by means of which an effectual back door for the escape of bile into the duodenum can be safely and quickly made. In conclusion, I append a diagrammatic report of seven cases in which I have operated upon the gall bladder or its ducts.

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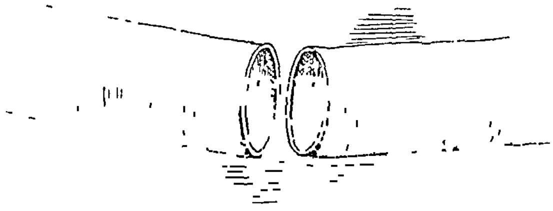
## SPECIMENS DEMONSTRATING THE OPERATION OF GASTRO-CHOLECYSTOTOMY, END-TO-END ANASTOMOSIS OF GUT, AND THE CONNECTING OF THE GALL BLADDER WITH THE ALIMENTARY TRACT.

AS PERFORMED WITH THE MURPHY BUTTON, AND BY THE MAUNSELL OPERATION.

Read before the Section on Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association.

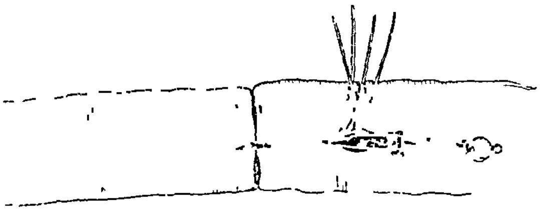
BY B. MERRILL RICKETTS, M.D.
CINCINNATI, O.

I am sorry, indeed, that circumstances would not permit of my being with you this morning as announced on the program. However, I must content myself with the time allotted to me this afternoon, a duly appreciated courtesy granted by the chairman. Dr. Murphy having demonstrated his gall bladder operation upon the dog prevents me from making anything more than a passing remark upon this operation. However, I wish to speak more fully upon the various other anastomoses.



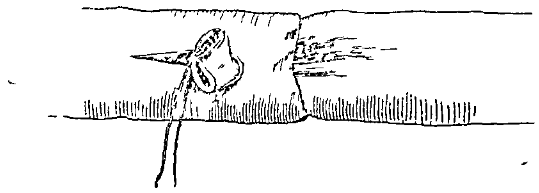
No. 1.

That I might simplify matters both in my remarks and demonstrations I have, with the assistance of an artist been able to give charts that are more instructive than words.



No. 2.

Six of these fully illustrate an end-to-end anastomosis, while four show the operation upon the stomach as suggested by Maunsell of New Zealand, some eleven years ago, but which was not published and made known until one year ago.



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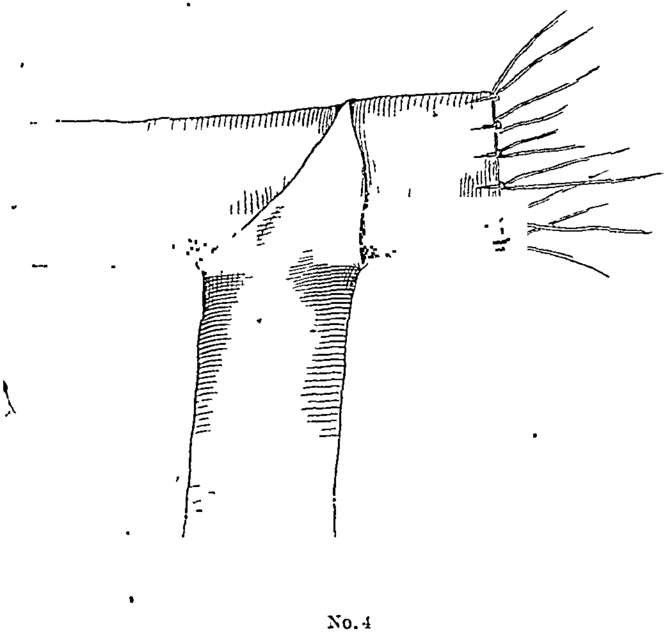
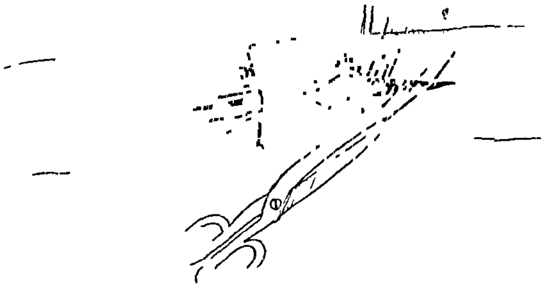


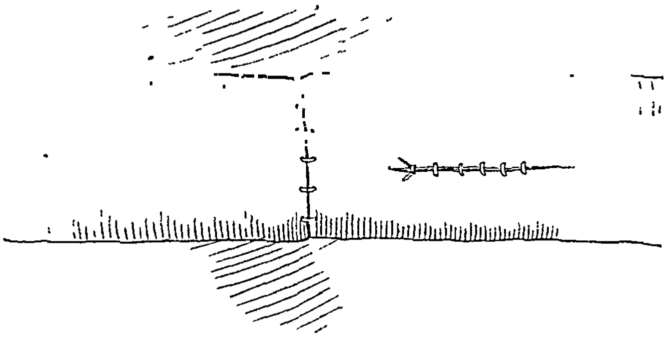
No. 4

Although I have operated frequently upon the dog in this manner, I know of no person except Dr. Frank Hartley of New York, who has made the operation upon the human being. This Dr. Hartley did in the month of May, 1892, for carcinoma of the gut.



No. 5

He informed me last November while I was in New York that the patient (a man) was living and doing well at that time. I suppose that we will hear from Dr. Hartley concerning this case.



No 6.

This operation, when understood, can be made by the average practitioner without much preparation; all that is needed being a knife, scissors, needle and thread.

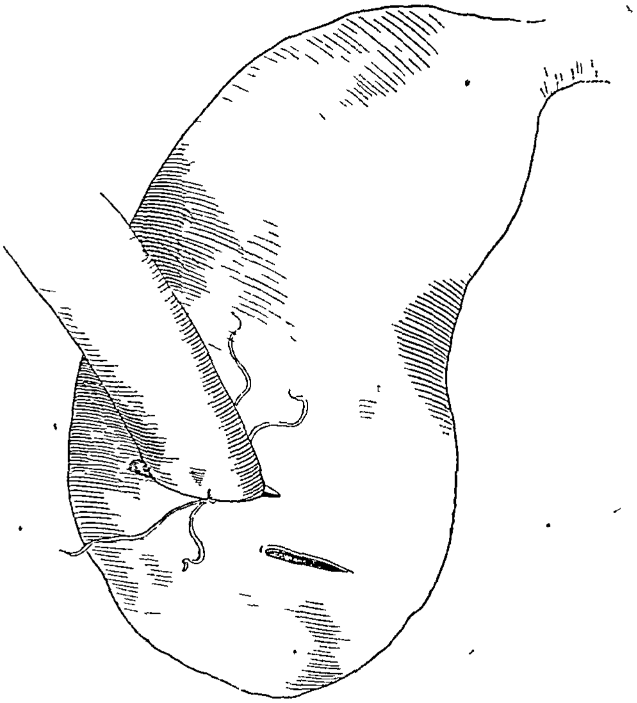


Fig. A

With this, as with all other devices for anastomosis, greater difficulty is experienced in gut of small caliber, and I find less difficulty in making connections with the dog's gut as it approaches the caliber of the average human alimentary tract.

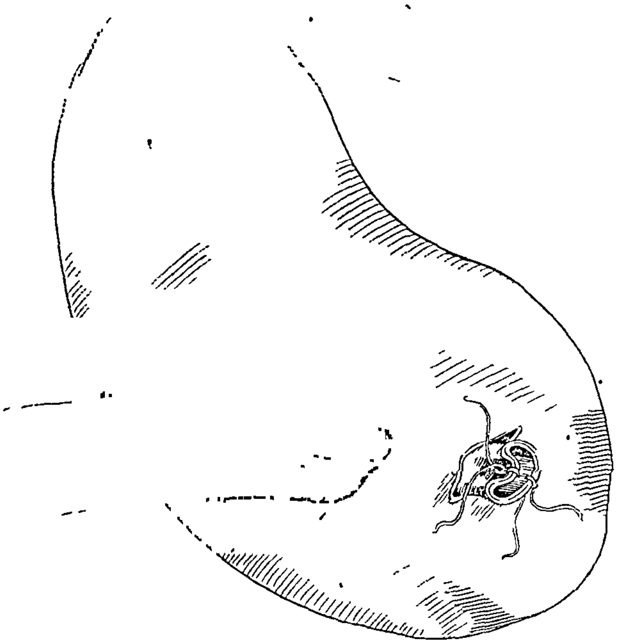


Fig. B.

My work with the Murphy button has been very satisfactory indeed, but the Murphy button is not and will not be found in the possession of 10 per cent. of the practitioners. Then, too, there is nothing left within the alimentary tract to jeopardize the life of the patient in its passage through that tract. Having not seen Mr. Maunsell's description of the operation, and having depended upon a short statement and one illustration, I have been left to learn of the operation through personal experimentation. I have thoroughly satisfied myself by this means, together with the statements by Dr. Hartley, that his operation was a success, and I am now ready to recommend it as one of the best means we have for the various anastomoses within the abdominal cavity.

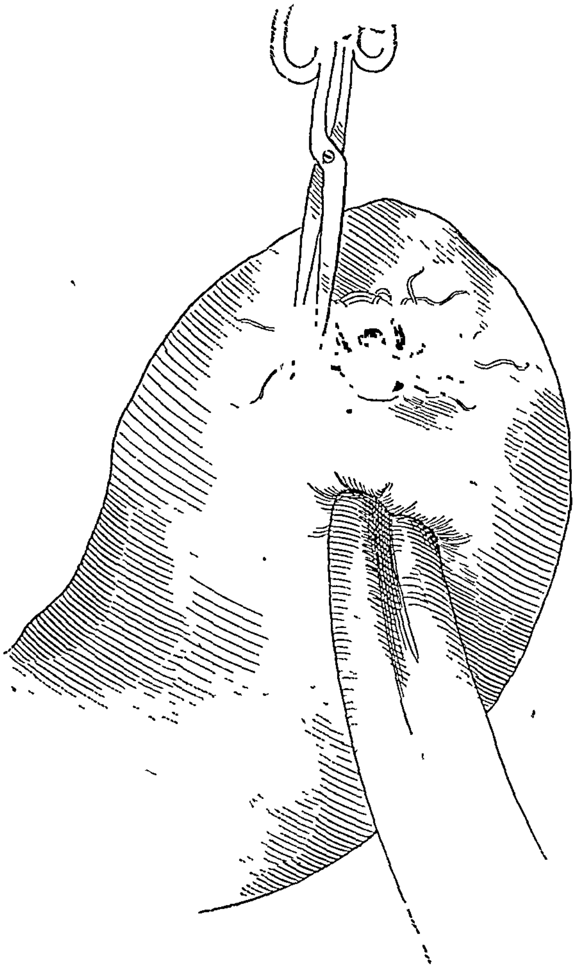


Fig C

No. 1 represents ends to be united.

No. 2 represents the ends of the fixation sutures, which have been drawn through the opening made in the gut for the purpose of invagination. These are the sutures that are removed after invagination has been produced, because the knots are on the peritoneal surface.

No. 3 represents the sutured ends drawn through the opening, and fixation sutures just before removal.

No. 4 represents completion of suturing, all the knots of which are on mucous side.

No. 5 shows partial reduction of invagination and stage of operation when ends of sutures are cut.

No. 6 shows appearance of gut after reduction and suturing the opening purposely made for invagination, also that the knots of sutures are within.

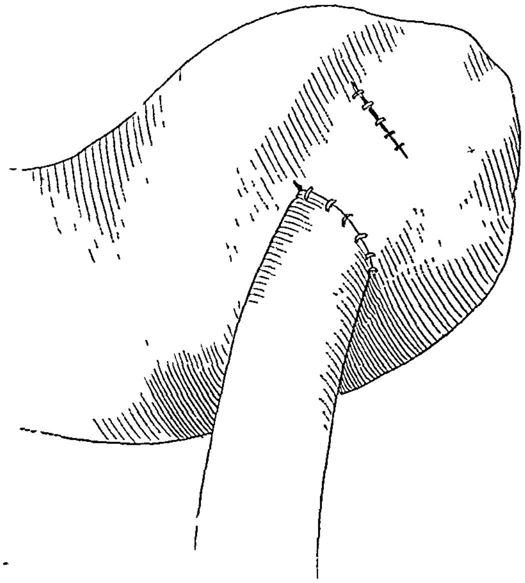


Fig D.

Connection with the stomach is accomplished by making two incisions in that organ, as shown in Figs. *a*, *b*, *c* and *d*. The object is to insert the smaller into the larger one.

I am sorry that my remarks are so limited, but I feel that, together with the diagrams, enough has been said to fully illustrate the operation.

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**Medical Detectivism.**—Dr. Conan Doyle's tales of detective acumen has made famous one of his medical teachers in the University of Edinburgh. The latest paragraph about Dr. Bell is the following:

"Professor Joseph Bell of Edinburgh is the original of Sherlock Holmes. Some years ago Professor Bell was medical examiner for an insurance company and an Edinburgh man presented himself for examination. After the victim had stripped to the waist, the professor poked him in the ribs and said:—"You have belonged to the Volunteers?" The gentleman admitted that was the fact, but said his volunteering had been done years before. It seems that certain muscles are developed by a military life, and that the professor knowing the man was not a soldier, and seeing those muscles developed on his body, at once jumped to the correct conclusion that he had been a Volunteer."

# THE ESTABLISHMENT AND MAINTENANCE OF AN ARTIFICIAL URETHRA ABOVE THE SYMPHYSIS PUBIS IN CHRONIC PROSTATIC OBSTRUCTION.

Read in the Section of Surgery and Anatomy, at the Forty fourth Annual Meeting of the American Medical Association.

BY D. J. HAYES, M.D.
MILWAUKEE.
Professor of Surgery of the Genito-urinary System in the Post-Graduate School of Medicine, Chicago, Ill.

I propose to call your attention to an operation for the relief of an extremely distressing and painful form of disease in men, the relief of which was very inadequate until of very recent date. I refer to the establishment of a urethra above the pubic bone in chronic prostatic obstruction.

From a series of over two hundred post-mortems prosecuted by Sir Henry Thompson on male patients over 55 years of age, to determine the percentage of those who were affected with prostatic enlargement it was found that about one in three had more or less enlargement, and only about one in seven of those exhibited symptoms of the disease during life. Consequently we may expect about one man in twenty who is approaching 60 years of age to consult us for this difficulty.

As a rule, enlargement of the prostate takes place in all directions, with occasionally the development within it of separate tumors resembling uterine fibromyomata. Sometimes only one lobe is affected, and again the whole trouble may be due to overgrowth of the middle lobe, which when enlarged gives rise to complete retention.

As the gland enlarges, the length of the prostatic urethra increases, often reaching four inches in length. The vesical orifice is thrown up behind the symphysis, and the curve of the prostatic urethra is much increased, which explains the difficulty often experienced in introducing an instrument into the bladder, and has led to the use of specially devised instruments to traverse the deformed urethra.

In advanced prostatic obstruction the greater portion of the bladder is lower than the internal orifice of the urethra, and forms a pouch behind the prostate. More or less residual urine is left in this pouch after each act of micturition. The obstruction as well as the residual urine increases from month to month and from year to year, and undergoes ammoniacal fermentation from the presence and action of putrefactive bacteria, producing irritation and progressive infection. Inflammation extends from the mucous to the submucous and muscular coat. The bladder walls become hypertrophied from over work. Contraction takes place with loss of extensibility.

The urine which is loaded with mucus, pus and putrefactive bacteria, is forced back into the ureters, distending and producing inflammation in them.

On account of the stagnation of putrid urine in the bladder and ureters, more or less of this urine is left in the pelvis of kidneys, ending in pyelo-nephrosis or surgical kidney, from which the patient dies, but not until after months and perhaps years of the most intense suffering.

Many cases of cystitis due to prostatic obstruction are entirely relieved by rest and attention to the general health, while in more advanced prostatic disease the distressing symptoms may be relieved by withdrawal of the residual urine with the catheter and thoroughly irrigating the bladder with antiseptic solutions and proper internal treatment. In another class of cases of which I wish to speak more fully the obstruction is more or less complete. Perhaps not a drop of urine can be passed without the use of the catheter. The bladder is much contracted and the use of the catheter becomes a necessity from fifteen to twenty times a day. The increased growth of the prostate makes the canal difficult to traverse, alike for the surgeon and patient. He only experiences half an hour's rest at night when a desire comes to urinate; again another attempt is made to pass the catheter through the deformed urethra. His powers are taxed to the utmost for continuous sleep is out of the question and his health rapidly declines. Among some of the many operations which have been devised from time for the reduction of prostatic hypertrophy may be mentioned, first, the injection into the prostate with a curved needle of a solution of iodin and iodid of potassium (Heine) which not only gave negative results, but proved to be dangerous. Many competent observers have spent both time and money with electricity without showing any brilliant results. The different methods of compression which have been used have not been attended with success, notwithstanding their frequent and continued recommendation. Internal medical treatment has been as ineffectual as compression.

Mercier's method of punching out a portion of the middle lobe through the urethra by a specially devised instrument has had few advocates and was never used to any extent on this side of the Atlantic.

Another operation which is more recent, and with which the name of Reginald Harrison is intimately connected, consists in opening the bladder by a median perineal incision, dividing the obstructing portion of the prostate and retaining a tube in the opening for six or seven weeks; large bougies are subsequently passed to keep the wound open, when finally it is allowed to heal. The low operation has many disadvantages. First, the patient who is generally in a poor condition of health from long suffering is confined to bed for many weeks; secondly, when the tube is withdrawn and the patient is up and around, there is a constant dribbling of urine, and when the opening is allowed to heal, all the old symptoms are liable to recur.

Prostatectomy, supra pubically through the perineum, or combined, has given brilliant results in many cases in the hands of McGill, Guyon, Moullin, Belfield, Keyes and other enthusiastic workers in the department of surgery. As a rule, patients who submit to this operation are men well advanced in life, and worn out by long continued suffering have renal complications, and the mortality must necessarily be high from uremia and sepsis. The question now arises, can anything be done by any other operative measures for the permanent relief of those cases? It can be answered in the affirmative. By the establishment and maintenance of a urethra above the symphysis pubis. The honor of having first planned and performed this operation belongs to Dr. Hunter McGuire. The technique of the operation is about the same as supra pubic cystotomy for vesical calculus. The patient is prepared the same as for any other abdominal operation. The rectal bag is introduced and distended with fluid. The bladder is thoroughly cleansed with a one-sixth per cent. solution of salicylic acid, which has the advantage over other solutions of removing completely all the mucus and pus from the bladder wall, which is an important point in the subsequent steps of the operation.

The bladder is distended with the same fluid. The supra pubic region is thoroughly disinfected. The incision is made down to the bladder in the usual way and the bladder is opened on a line with the upper border of the pubic bone. The rectal and bladder distension raises the bladder in the pelvis, consequently the peritoneum is not encountered.

After the bladder is opened the interior is thoroughly explored for vesical calculus, tumors, etc. If there is obstruction at the outlet of the bladder due to projection of the middle lobe, its removal should be attempted if the patient's strength will admit. Any of the tissues should not be lacerated during the operation; particularly is this true of the loose cellular tissue surrounding the bladder as it opens avenues for subsequent urinary infiltration. The bladder walls are not sewed in the wound but allowed to drop back into the pelvis. A large gum catheter is introduced through the wound into the bladder and the urine removed by siphon action. When the wound contracts down to the size of a ten or twelve English catheter the opening is maintained by wearing a plug which resembles a tracheotomy tube, at least a portion of the time. When the desire comes to urinate the plug is removed and the bladder empties itself through the artificial urethra with considerable force. The urethra which is now established is from three-fourths to one and one-half inches in length. In the intervals of urination the recti muscles and other tissues close the opening and there is no dribbling of urine whatever.

Within the past year I have established an artificial urethra above the symphysis pubis in two cases; both were very great sufferers and in both the time had arrived when the introduction of the catheter was difficult both for the patient and surgeon. One of them has kindly consented to appear at the meeting this afternoon. He is a man nearly seventy-two years of age, and has always enjoyed excellent health until about five or six years ago. when his trouble first commenced with frequency of urination, particularly at night. He grew progressively worse, and for the past six months previous to the operation he was not able to leave the house and was introducing the catheter from fifteen to twenty times a day. He was suffering fearfully, notwithstanding the use of large doses of morphine. His urine contained large quantities of mucus pus and bladder epithelium. Although he had been a very great sufferer for some time no evidence of renal disease could be found by either chemical or microscopical examination of the urine, which is exceptional in a case that has had disease in the lower portion of the urinary tract so long. He was very anemic and his health was rapidly declining. He consented to an operation which was performed on April 11, 1893. The preparatory treatment consisted in irrigating the bladder twice daily for three or four days previous to the operation with a saturated solution of boracic acid containing one-sixth per cent. of salicylic acid, trit. repens. and salol internally. The bladder was opened in the usual way and in a pocket behind the enormously projecting prostate were found a few small stones which were removed. The bladder was allowed to drop back in the pelvis and a large drain introduced through the wound into the bladder. No attempt was made to remove any of the projecting portion of the prostate as the patient's enfeebled condition would not admit of it.

There was some temperature following the operation. The bladder was irrigated three times daily through the tube and dilated as much as possible by hydraulic pressure. He was relieved from pain immediately after the operation and has taken no morphine since. His urine is now clear from mucus and pus and he is able to hold his water from three to five hours during the day and only arises once or twice at night. When the wound contracted down to the size of a number 10 English catheter the plug which resembles, as you will observe, a tracheotomy tube, is introduced for at least a portion of the day to maintain the opening. The patient is now able to empty the bladder completely through the artificial urethra which is just one inch in length. The urine is often expelled several feet from the body. There has been no dribbling of urine whatever since he is up and about. He has gained very rapidly since the operation and you will observe that he is in good condition. He eats well and sleeps well and goes to his place of business daily. He is an enthusiastic advocate of the operation and those who wish to examine him may do so.

The next case was a man 64 years of age. He had been suffering more or less for six years; for some months previous to the operation he was passing a catheter from twelve to fifteen times a day. He had a severe cystitis and his bladder was contracted; rectal examination with a sound in the bladder showed the prostate greatly enlarged in both longitudinal and transverse diameters. His urine was loaded with mucus, pus, and occasionally contained small quantities of blood. He had been treated for some time with antiseptic irrigations of bladder and morphine suppositories. The operation was made in the usual way; the bladder walls were found greatly thickened and sacculated.

In the course of two weeks he was up and about, and when the wound contracted down to a number 10 English catheter, which was about six weeks, the plug was introduced to maintain the opening, and worn a portion of the time. There was some necrosis of the prevesical tissues due to contact with the septic urine. To obviate this danger Dr. W. T. Belfield, of Chicago, recommends making the operation in two stages; at the first operation merely exposing the bladder and packing the wound with gauze until granulations are established, five to seven days, then opening the bladder and completing the operation. The urine is now free from mucus and pus, and he is able to hold it from three to five hours at a time. Both patients are enthusiastic advocates of the operation.

The question might be asked: Is this simply a palliative or ultimately a curative operation? The limited time that has elapsed since my operations will not admit of my answering this question from my own personal knowledge. Dr. McGuire who has had a large experience with the operation reports gradual reduction of the size of the prostate with final restoration of the powers of micturition by the natural route. This is not unreasonable to expect when we consider the greater portion of the hyperplasia is due to the disturbance of urination which constantly exists. And when the bladder and prostatic are put at rest gradual absorption of the obstructing tissues might take place. No case in the whole field of surgery can appeal more to our sympathies than a man with advanced cystitis due to prostatic obstruction, and in no case should a surgeon stand by and use simple palliative measures when a radical operation performed early will save the patient long and indescribable suffering.

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## A NEW MATERIAL FOR SURGICAL SPLINTS AND JACKETS, WITH A METHOD FOR APPLYING IT.

Read in the Section on Surgery and Anatomy, at the Forty fourth Annual Meeting of the American Medical Association

BY EDWARD A. TRACY, M D.
BOSTON, MASS

This material, in its crude form, is old as the hills—for the members of the energetic wasp family have used it, time out o' mind, in the construction of their homesteads. I refer to wood pulp.

There are many varieties of pulp board on the market, and to give their characteristics in detail would needlessly take up your time; suffice it to say they were tried and found wanting. The needful combination of properties sought for was plasticity, toughness, elasticity and rigidity. It took some experimentation to get the desired product, but my task was lightened by consulting my friend, Mr. Charles H. Fish, of Manchester, N. H., a gentleman familiar with every branch of pulp manufacture.

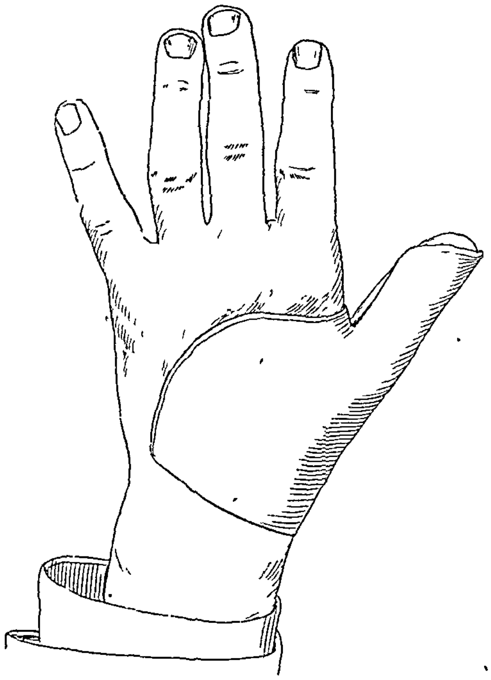

Fig 1.

The experiments made, and the manufacturing processes employed, might form matter for interesting discourse in the laboratory and the mill; I do not propose to claim your attention for them here, but shall place directly before you a sample of the finished material, and explain how the practical surgeon bends it to his will and produces therefrom a good surgical splint.

A sheet of the material is taken and the splint-blank of the shape intended cut from it. Ordinary arm and leg splints can be outlined immediately on the pulp-sheet and cut without other pattern. For more complex splints, as of the elbow, shoulder, spine, or pelvis, it is serviceable to first cut a pattern of cloth or paper laid over the part in the position it is intended to retain it, and afterwards, with this pattern for a guide, the proper shaped blank can be cut from the sheet of pulp board. The splint-blank should be moistened (best done by means of a brush) with water, or a stiffening solution, just enough to render the material plastic; then it should be carefully molded over the part with the aid of a roller bandage; after being so retained for a moment, let it be removed and dried. An accurately fitting splint results.

Of the various stiffening solutions tried, that of potassium silicate gives particularly good results. The solution ordinarily sold for surgeons' use and further diluted with water (10 to 50 per cent. according to the rigidity desired) can be conveniently used. This solution hastens the drying process, adds rigidity to the splint, prevents perspiration from softening it, and renders the splint antiseptic. These facts are illustrated in the specimen shown, a splint made in fifteen minutes for a case of compound fracture of the right forefinger; during a part of the time it was worn, its distal end was plunged thrice daily into an antiseptic solution and you can witness how it withstood the treatment. (See Fig. 4.)

A solution of dextrine serves well, adding toughness and stiffness to the material. It is convenient for the general practitioner because dextrine (to be had of paint wholesalers) can be kept in powder form and a solution extemporized at any time. Good results are gotten with water as a moistener, and I recall an emergency case treated last winter where with it, a kitchen fire, and a piece of this pulp board, an excellent splint was made in half an hour for a severe injury of the ankle. The splint was worn for three weeks.

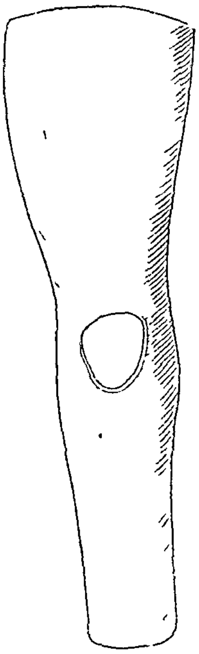

Fig. 2.

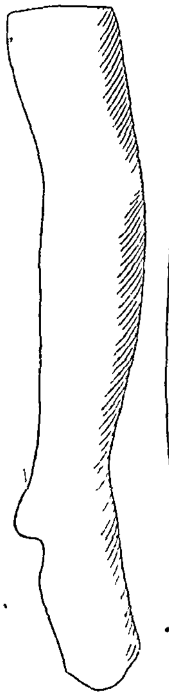

Fig. 3.

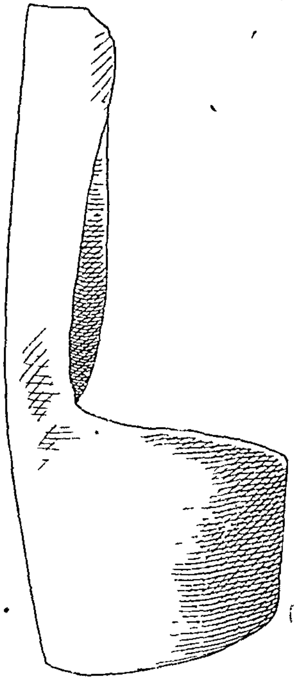

Fig 4.

Now that the practical working of the material has been touched upon, a glance at the possibilities of its future use may be permitted me.

An illustrious member of this Association, Dr. Marcy of Boston, struck the keynote on seeing one of my earlier splints: "The surgeon must make a splint to fit the limb—not the limb to the splint."

For leg, arm and finger splints, it requires no special skill to obtain superior results with my material. A study of the accompanying illustrations will indicate this. No. 1 is that of a splint for fixation of the left thumb, including its metacarpal bone. No. 2 shows an anterior knee splint for making immobile the knee joint; with a reënforcement controlling the quadriceps femoris it may prove useful in fracture of the patella. No. 3 represents a splint molded over the inner side of the right arm as it hung limp by the body, the palm against the thigh.

In complex cases the genius of the surgeon and his handicraft can shine forth in the creation of apparatus suitable for the case.

Apparatus heretofore impossible or rare because of its cost or the necessity for employing skilled tradesmen, will become plentiful.

Finally, knowing the properties possessed by this material, it requires but little foresight to comprehend the evolution in the near future of radically new apparatus for the treatment of various surgical affections.

In concluding, I feel happy to here express my hearty acknowledgment and thanks for suggestions and kindnesses tendered me by Drs. H. P. Bowditch, M. F. Gavin, G. W. Gay, H. M. Marcy and D. W. Cheever of Boston; also, to Dr. W. M. Conant, who very courteously placed suitable hospital cases at my disposal, when experimenting on the material.

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## ON SOME POINTS CONCERNING CLUB FOOT.

Abstract of a clinical lecture delivered at the Children's Hospital, Great Ormond street, London, May 11, 1893

BY EDMOND OWEN, F.R.C.S.

SURGEON TO THE HOSPITAL, LONDON, ENG; SURGEON TO ST. MARY'S HOSPITAL.

[ABSTRACTED BY A. M. PHELPS, M.D., NEW YORK.]

Mr. Owen recognizes the two forms of equino varus, viz: the congenital and acquired, and also calls attention to the fact that one variety is much more easily cured than the other. He inclines to the belief that pressure in utero is one of the chief causes of the deformity. I quote:

" Probably, after all, the cause of the congenital deformity is the faulty packing of the fœtus in utero. Here I show you a specimen of a fœtus taken by surprise, as it were, and removed at about the sixth month. You will notice that the heels are markedly drawn up and the soles turned inwards. Often after a premature labor we find the feet folded flat upon the front of the chest, and much more inverted than in the specimen I have just handed round. It is a very suggestive fact that no other variety of club foot is found as a congenital defect. Only once have I met with a congenital instance of *talipes valgus.* I suppose the explanation is, that when the fœtus is in utero, the muscular walls of the uterus can easily press and invert the feet against the front of the chest, while it is well nigh impossible for the uterine walls to turn the feet with the soles everted. The extreme inversion is evidently to insure the most convenient packing in utero; the fœtus could not be snugly packed in utero with the soles turned out in the position of talipes valgus."

He teaches that the treatment should be commenced immediately after birth by manipulation and fixation, " that the various fibers which are binding the foot in a faulty position may be the more easily stretched."

"Here is a boy whose foot illustrates the contraction of the plantar fascia—a case of paralytic equino varus. The case shows only in a moderate degree the double deformity, but it well illustrates the creasing across the sole; by pressing with the finger when the foot is in a somewhat corrected position, you will feel the very tight band which is caused by the plantar fascia. The structures needing attention, then, are the skin, the tendon of Achilles, the tibialis posticus, the flexors of the toes, the tibialis anticus and the plantar fascia. Last, we come to the anterior part of the internal lateral ligament. This is a very obstinate element in maintaining the deformity after the tendons have been divided. Students, as a rule, do not understand the importance of the internal lateral—the deltoid ligament. It is attached above to the internal malleolus, and below it spreads into the sustentaculum tali, and (which is the important point) forward on to the scaphoid bone. As a matter of fact only a comparatively small part of the internal lateral ligament runs to the astragalus; a good deal of it goes to the os calcis, and still more to the scaphoid bone; so that, if the foot has been cramped in the position of equino varus, it is impossible to straighten it out correctly, unless the anterior part of the internal lateral ligament which runs from the internal malleolus to the scaphoid bone is effectually dealt with. (This dissected specimen of a club foot shows the strong, anterior part of the internal lateral ligament holding the foot rigidly against the lower end of the tibia.) "

"I said a few minutes back that it was a matter of great concern to the surgeon whether the club foot which he was called upon to treat was a congenital defect, or the result of a central nervous lesion; the congenital defect being much more amenable to treatment than the deformity which is the result of infantile paralysis. And so marked is the difference in the result of the treatment in these two classes of cases, that there are some surgeons who absolutely refuse to operate at all in equino varus, which is the result of paralysis. No surgeon can get a very brilliant result in such cases, but with vigorous treatment he may get, as I shall show, a very fair one."

In the treatment of babies suffering from congenital talipes varo equino I quote the following:

" As regards the treatment of the congenital equino varus, as soon as the child has been washed the manipulations are to be begun by the surgeon trying to put the foot into an improved position. He will gain a little every time. He takes the ankle in one hand, and grasping the foot with the other, he flexes the foot; that is, he brings down the heel, and he gently but firmly everts the foot. Every time he goes to see the mother he must resort to this little maneuver, and he must also get the monthly nurse to help in the intervals of his visits. Three times a day, or oftener, the nurse is firmly to flex the foot; and little by little the skin and the ligaments and the tendons will yield, and the foot will come into the improved position."

"Should the case be neglected, it will return to the hospital with a relapse."

"The mention of this word 'relapse' causes me to make a remark in connection with the treatment of club foot; you hear, or at any rate I hear surgeons of experience in connection with club foot, say that they never have, or have had, a relapse after treatment, and that they would be ashamed if any of their cases did relapse. When I hear them publicly talk like this, my thoughts revert to Ananias. Relapses there must be in the treatment of club foot, unless the surgeon is constantly watching over the case day after day and week after week, and it may be year after year; and how rarely can this effective supervision be insured. Relapses there are and must be in the practice of every surgeon.

"I never see relapses in cases which I am permitted to handle after operation."

"But to return: The treatment of the simple congenital defect consists, then, in manipulation—vigorous, it may be—so that the anterior part of the internal lateral ligament and other structures may be well stretched. But suppose after several months of this procedure, although the gain is considerable, it is insufficient—something else must be done; and that should be subcutaneous section of the tendon of Achilles. It is inadvisable and useless for the surgeon to struggle against this strong and resisting structure. If he finds that he is not making sufficient progress, let him divide it first and foremost, and he will then obtain a fresh start. If you turn to your works on orthopedic surgery you will find it advised that section of the tendon of Achilles should always be left to the last division; but I say, let this tendon be divided *first* of everything, as it is the most important element in holding the foot in the wrong position."

He explains correctly that division of the tendon of Achilles not only allows the heel to come down, but also the inversion is overcome. I quote:

"Possibly I have not made myself sufficiently clear. Let me show what I mean upon this cast. Here is the tendon of Achilles running to its insertion, the heel being in the mid-line. The contraction still takes place in the tendon of Achilles, and the heel, which is fairly movable under the astragalus. becomes rolled inwards. This is not theory, it is an actual fact; and when in these cases the tendon of Achilles is divided, not only does the heel come down, but the inversion is corrected."

"How do you know that any individual case of equino varus that you have to treat, is not one of those cases in which simple division of the tendon of Achilles may not effect so much improvement? Divide the tendon of Achilles first and see. That is the only way to find out. I stand by the assertion that the tendon of Achilles should always be divided first, when we are operating for equino varus. Sometimes this simple tenotomy suffices in the way of operation: often other tendons have to be divided as well."

Mr. Owen graphically pictures a case treated by subcutaneous work in the following words:

"Let us in our charity suggest it is a case of relapse, a case which has been under somebody else, and the child is four or five years old. Evidently manipulations, frictions and massage will not suffice for the effacement of the remaining deformity. The tendon of Achilles is to be divided first. Then, perhaps, the tendon of the tibialis anticus and that of the tibialis posticus, subcutaneously, if you will; and subcutaneously the plantar fascia shall be divided; and subcutaneously everything else shall be divided which prevents your getting the foot into the improved position. But in my experience this subcutaneous surgery has not been altogether satisfactory. In any case, for instance, the skin prevents due unfolding of the foot. Of course if a surgeon asserts that he never has a relapse, and that he resorts to no more severe method of treatment than that of subcutaneous division of these structures, then I shall say, granting that all he says is true, by all means let him continue; but my experience in hospital practice, and especially with the out-patient class, is that subcutaneous operations do not effect enough. How, then, is a case of relapsed or neglected club foot to be dealt with? You shall perform the subcutaneous divisions of tendon and fascia, if you will, and in a slight case this operation will suffice.

"I remarked a little while ago that the skin formed a considerable element obstructing the reduction of the double deformity; and it was partly in recognition of this fact that Phelps of New York suggested an extremely radical measure in the treatment of talipes. Recognizing the fact also that the days are fortunately past in which open wounds are followed by inflammation, suppuration, or some form of blood poisoning, Phelps boldly suggested that a free incision should be made into the inner border of the sole of the foot, and that every structure which opposed itself to the perfect correction of the deformity should be thoroughly and effectually divided. This open operation of Phelps' is the operation which I am performing a good deal in connection with these cases—not, of course, in the treatment of every young child, or of any child with a slight deformity, but in the case of a child with a neglected, or an extreme deformity. And I am anxious to advocate it as warmly as I can to-day. I have never found any occasion to regret having resorted to Phelps' operation; but on the contrary have every reason for speaking of it in the highest terms. It is performed as follows: The tendon of Achilles is of course first divided, and, with a good deal of brute force, the surgeon does his best to get the foot into the improved position. A vertical incision is then made on the inner side of the foot a little in front of the internal malleolus, over the head of the astragalus. The incision will probably expose the internal saphenous vein, and this is sometimes divided in the operation, though sometimes the surgeon is able to complete the operation without dividing it; but if it is cut it is no great matter. After that he divides the tibialis anticus and, in the lower part of the incision the tibialis posticus, as it runs round to its insertion."

"The plantar fascia is then cut and some of the abductor of the great toe, and then, deep in the sole, the surgeon meets with the long flexor of the toes. Then, using some force still, he improves the position of the foot. Proceeding further he cuts the anterior part of the internal lateral ligament, at the same time exerting more energy upon the foot, and making a wide separation between the head of the astragalus and the scaphoid. Thus he is enabled to get the foot into the straight line, and, breaking through any remaining fibers that resist, he bends the anterior segment of the foot right back, opening the calcareo-cuboid joint, in all probability. When he is satisfied that nothing remains to impede the easy effacement of the deformity, he gently fills the gaping wound with mercuric gauze, and encloses the foot in lateral splints of house flannel which have been soaked in creamy plaster of Paris. In fixing up the foot it is by no means necessary to use force or restraint, for no resisting elements remain. It is advisable in fixing the foot to have the deformity over-corrected, trusting to the growth of granulation tissue to fill up the wedge shaped cavity. Sometimes the dressing has to be reapplied next day, but as a rule, the foot remains undisturbed for ten or fourteen days. In some cases, indeed, I have allowed a longer interval to elapse before disturbing the first dressing."

In my earliest operations, I was half afraid lest the anterior segment of the foot should slough, but I have never had such apprehensions realized. In fact, it looks as if it might almost have been by design that the large artery of the foot, the external plantar, was specially placed along the outer part of the sole so that it might offer no hindrance to the surgeon who contemplated a resort to Phelps' open method of operating for talipes equino varus. In the course of eight weeks—more or less—the wound is quite healed, epidermis has grown over its surface, and the mass of granulation tissue which filled the space is being converted into strong fibrous tissue for the consolidation of the foot.

"I must just briefly allude to other operations. Possibly next time I shall have to say more on this subject, but merely for the sake of making comparison between Phelps' operation and the other operations which pass under the name of tarsectomy—cutting out a piece of the tarsus. In Phelps' operation nothing is cut away. But in the operation of tarsectomy it may be that the cuboid is removed, or that a wedge is taken from the outside of the foot, the base of the wedge being outwards and implicating various bones of the foot. Or it may be that the astragalus is taken away, so that the structures running from the leg to the foot are slackened, and that the os calcis may fall into its position between the two malleoli. But whichever of these forms of tarsectomy is adopted, there is—there must be—a considerable loss of tissue, for the improvement in the position of the foot is effected by a shortening of the external border of the foot. But in Phelps' operation the improvement is effected by the sacrifice of no tissue whatever, but by the insertion of a wedge of space, as it were, on the inner side of the foot. Thus, when the various resisting structures have been divided, a large gap exists between the head of the astragalus and the posterior aspect of the scaphoid bone."

"I show you here a boy whose case was most unpromising for any operation for talipes; the boy with infantile paralysis on whom I was demonstrating a little while ago. Unfortunately, I have no cast or figure to show the position in which the foot was before his operation. Kindly take my word for it that the deformity was extreme and the prospect unpromising. I performed Phelps' operation upon the foot, dividing everything, and now we have the foot in a very fair position; I think we may say a very excellent position, with no inclination whatever to relapse. Now I am sure of this, that no subcutaneous operation could have effected such an improvement as this open operation has effected, and no tarsectomy could have brought about so great and real an improvement, because in that operation the foot is necessarily robbed of most important elements. The result in this case, so far as it goes, is extremely satisfactory. On being made to walk the patient gets his foot very flat, as you see. A most important point in this operation, and one on which Phelps insists very strongly and rightly, is that the malposition must be *over-corrected*. Relapse is not very likely to take place, but if you get (if I may use the expression) well to windward of the defect, it matters less if contraction does take place. It is a little heterodox to say that after an operation on club foot the foot should be put in the over-corrected position. In the textbooks you will probably find the advice still given to put up the foot in the old position for a certain length of time, so that the plastic effusion which takes place between the cut ends of the tendon may be gradually stretched. But the answer to that is that the ends of the tendons should be as wide apart as possible, that the little inflammation which is set up by the operation will be followed by the formation of a certain amount of granulation tissue, that this granulation tissue will be converted into fibrous tissue, and by this means a sufficiently long splice may be put into the tendon; and not only a longer splice than you would get if you put up the foot in the old position again, but a stronger splice. If you were putting the foot up in the old position and then gradually stretching the union between the cut ends of the tendon, with each stretching you would be sure to get an attenuation of the uniting mediums and a weakening of the tendon. You would get a less strong band of union between the cut ends than if you boldly and at once put the foot up in the over-corrected position."

"Here is a baby on whom Phelps' operation was performed for double congenital equino varus. Now it is said, and I think very fairly, that in a young child so severe an operation as that of Phelps should not be resorted to. I think it is fair criticism, but I will say that if Phelps' operation is going to give a favorable result in a biggish child, why should it not be resorted to in the case of a little child? In *every* case of a little child I would not resort to Phelps' operation; but here is a very little child, not a year old, with double equino varus, on whom I did perform Phelps' operation on each foot, and see how strong the feet are, and in what a very satisfactory position they remain. This child I have seen nothing of since it left the hospital after the operation months ago; that is to say, there has been no after treatment needed. There is nothing like a flail-like condition in the feet. They are quite solid. If we had done a simple subcutaneous tenotomy in this case, and sent the child away, the mother or friends would not have been able to look satisfactorily after the child, and in all probability, relapse would have taken place. My experience has been mostly with hospital patients. There are other surgeons who deal chiefly with private patients, and of course they can have them longer under supervision, and show excellent results with subcutaneous tenotomy. But, by the hospital surgeon, the open operation has but to be practiced to be appreciated."

"What about a Scarpa's shoe? It is quite out of date. If it is used, unless the child is seen almost every day, it will almost certainly give rise to an excoriation or a sore place. Plaster of Paris is far better. But in the early cases the less, if any, retentive apparatus, the freer the leg and foot, the better for the subsequent development."

"Here is a boy sixteen months old, and these are casts of his feet before operation. The case is not now quite so satisfactory. On the right side there is still a little inversion, notwithstanding all the structures named having been divided. The inversion which persists is, I think, sure proof that after Phelps' operation a limp splay foot is not the result. On the right side, the foot is in a very excellent position, but on the left side, there is just this little inversion, which I believe will be easily corrected by simple manipulation. I do not think that any further operation is needed. I have not seen this child for months."

"It is a point in favor of Phelps' operation, that when you have divided all resisting structures, there can be no more contraction of them. You have done the work and the child will hardly require looking after. As we are going to operate this day week, on this boy (case previously referred to), I shall be able to show exactly the method of treatment; but I may say in passing, that after the large wound has been made, the cavity is generally stuffed with a little mercuric gauze, and that the foot is then fixed in the position of over-correction. I here show you this other boy, operated on two years ago, when he was a year old. This was a case of extreme equino varus. There is no attempt at inversion here, and the boy, who has had plaster of Paris on, if he could stand could get his foot well to the ground. The foot has nothing like a flail between the anterior and the posterior segment of the foot."

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# RELIEF FROM PAIN IN LABOR.

Read before the Section on Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association

BY I. N. LOVE, M.D.

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As physicians, we may well ask ourselves if we sufficiently appreciate the importance of saving our patient pain. I will say that pain in the abstract is conservative, that it is the announcement on the part of nature that something is wrong and needs correction, and that we should be very guarded in relieving pain for fear of removing nature's flag of distress rather than removing the cause, but the arguments which will apply to pain which is an evidence of disease are not in my judgment apropos to pain as an accompaniment of parturition.

In the primitive state, undoubtedly woman was possessed with great muscular force and absence of nervous sensibility. Civilization, social customs, modern habits of life have developed the nervous centers at the expense of the muscular tissues, and we have in these latter days women who may truly be termed sensitive plants, whose muscular force is below par and whose nervous systems are "on edge" as it were.

I have made it a rule for many years to insist upon a thoroughly cleared out condition of the alimentary canal upon the part of every woman under my care during the entire term of pregnancy; at the same time I have encouraged elimination on the part of the other excretory organs by the liberal administration of Garrod-Spa water, freely flushing out in this way the kidneys at frequent intervals. The activity of the skin I have encouraged by frequent warm baths at bedtime. This latter has aided in the direction of a greater degree of restfulness which is important.

As every one knows, the average woman is constipated; doubly so during pregnancy, and there are double reasons for making efforts to remove this condition, because the interests of two people are involved instead of one. When I have evidence that labor is near at hand, I give my patient an increased amount of purgation. Immediately following the termination of labor I again purge freely with a view to the better clearing out of the alimentary canal and the removing of accumulated poisons. When I graduated in medicine, the instruction was given me to wait until the third day after confinement before evacuating the bowels. The same argument presented in favor of purgation as a preventer of peritoneal inflammation following abdominal sections, rather than opiates, will apply to the parturient woman. Constant, careful regard for all of the excretory organs, the keeping of the animated system of sewerage thoroughly cleared out, will in my judgment in the majority of cases eliminate puerperal convulsions from the nosology of the accoucheur. So much for elimination.

Now with regard to the best good of our patient from the standpoint of prevention of pain. We all know that the pregnant woman is prone to having her nervous system out of joint; in fact, the condition in itself is a severe test to the female nervous system. It is needless to recall to your mind how the very beginning of pregnancy is announced in many cases by peculiar nervous phenomena. During the entire term the imagination of the woman often becomes exalted or depressed. Her disposition is irritable. In many cases she is continually between two fires; upon the one side the greatest gloom, upon the other an excessive joy. Suspicion, jealousy, general sensitiveness are present, which under other conditions are never dreamed of. Nervous pains abound, migrainé, facial neuralgia, toothache, itching in various parts of the body, together with smarting and other evidence of irritation of the peripheral extremities of the nerves. The most grave nerve troubles sometimes are present; eclampsia, chorea and often mania. Truly we have evidence in favor of the thought that pregnancy is a severe test to the stability of the nervous system.

It is absurd to talk of pregnancy as being a physiological condition; as much so as the eating of one's dinner and the digestion of the same. Under primitive conditions it probably was so, but surely not under the conditions which prevail in this latter decade of the nineteenth century. How many of us have seen the last months of the pregnant woman made miserable by continual aches and persistent pains throughout the abdominal region and other parts of the body where there has been a disturbance of the circulation owing to pressure upon the vessels. Unless this condition of affairs receives attention the average pregnant woman is in poor shape for meeting the ordeal which faces her at the close of her nine months' siege. I consider it our duty to guard the nervous system during this siege as carefully as we have guarded the eliminative organs. We will find that attention to elimination will help us in our service as a pain reliever during these months of trial. The engorgement in certain parts of the body is less; the removal of ptomaines and other poisons, the activity on the part of the secretory system of glands renders the nerve centers less sensitive and less easily demoralized. At the same time we should save our patient every possible pain during this entire period. The warm baths at bedtime, suggested as aiders in the direction of elimination, also favor the soothing of the nervous system and a completer rest at night. Massage given by a skilled masseuse preferably, is beneficial.

The excruciating pains complained of in the lumbar and abdominal regions can be relieved to a marked degree by rubbing the surfaces with a liniment composed of equal parts of chloroform, tincture of iodin, tincture of belladonna, tincture of opium, tincture of arnica and olive oil. If the restlessness and pain be great toward the latter weeks of pregnancy, in spite of the measures suggested, it is our duty to furnish a more positive relief in the form either of a combination of bromid of soda and chloral, ten or fifteen grains each, to be repeated to the extent of securing rest, or even now and then the administration of an opiate. I believe, however, that it is our duty to deliver personally to our patient the remedy desired and not to write a prescription, in order that no knowledge may be had upon the part of the patient as to the nature of the remedy taken and that we may the better limit it. I have occasionally found a dose of ten or fifteen grains of sulphonal or antikamnia of service at bedtime. One thing I insist upon, that my patient shall not know the remedial agent administered.

We will suppose, now, that the period of labor has commenced and that the suggestions previously given have been observed. The first stage of labor is often tedious, particularly in the primipara, with frequent and persistent nagging pains.

I cannot better state my position than by reporting a single case which is illustrative of a large number:

Mrs. R., the mother of four children. Called hastily in the absence of her usual medical attendant, she seemingly anticipating the time by about two weeks. Age 32. Four previous confinements all long continued and exhausting and terminated with forceps, the reason being given that smallness and compactness of build on the part of the patient precluded natural delivery. Had never been given chloroform for the reason that the physician did not believe the patient was a good subject and besides did not believe in giving chloroform in labor. Bowels had not been moved for three or four days. Instructed the nurse to give an ounce of castor oil together with twenty drops of turpentine, to be followed in four hours by enema of two quarts of hot water administered by the medium of a fountain syringe with a large size soft rubber catheter in place of the usual rectal nozzle, the same to be introduced two-thirds of its length, the enema to be repeated unless a large and free action should be secured. Digital examination revealed a natural presentation with a rigid os in the first stage of dilatation. Giving the patient assurance that everything was in good shape and that I desired to give her a good night's rest, I administered one-fourth of a grain of morphia, hypodermatically, together with fifteen grains each of bromide of soda and chloral by the mouth, the latter to be repeated in two hours. The hour being late and inasmuch as the usual attendant of the patient was absent and she was extremely anxious and nervous, I decided to remain during the night and asked that I be shown to my room. This was 11 o'clock. At 8 o'clock in the morning I was awakened and informed that my services were needed. Two or three liberal actions had been secured from the bowels; the patient had rested in spite of this interruption comparatively well, sleeping a good part of the time; occasionally disturbed by an unusually severe pain. The rest, however, had been pronounced. Digital examination revealed a complete dilatation and the second stage of labor well advanced. The pains soon became very frequent, long and severe. The bearing down positive. At once commenced the administration of chloroform, preceding it by a stiff toddy, giving free inspiration during the pain with a good mingling of air. Relaxation was rapid and the obtundity of pain produced by the chloroform was profound and this assisted the disposition to bear down and within an hour an unusually large child, the first boy, was born. Placenta followed soon afterwards. Contraction of the uterus was complete. The patient gave assurance of the fact that she had never had so easy a time; that she had hardly known what pain was. It will be observed that the forceps were not necessary. Another purgative dose of oil was immediately ordered and instructions given to the nurse to give a small dose of bromid and chloral if necessary to secure rest during the day.

The patient from the beginning was given whatever she wanted to eat, bearing in mind only that excessive quantity should not be given at any time, owing to the fact that digestion would not be as energetic in bed as in health; in other words, the puerperal state does not preclude good food. The patient ought to be extra well fed in order to build up against the long drain and pressure under which she has labored; besides she has to meet an emergency in the direction of feeding two people instead of one, and this should be constantly remembered. Within five days she might safely have sat up. Suffice it to say that she made the best recovery in her experience. She thrived and her baby thrived better than ever before. It is needless to say that she from this time forth was a convert in favor of elimination, tranquilization, rest and freedom from pain, together with the best of food as a series of essentials to the successful emergence from the puerperal state.

I close this rambling paper by presenting the following conclusions:

1. Every pregnant woman throughout the entire period of her pregnancy should have the most careful attention given to her organs of elimination and to proper exercise.

2. Her nerve force throughout the ordeal must be economized, and particularly is this necessary during the last days and hours of her engagement.

3. The well being of herself and her child is involved in this matter of elimination, exercise and tranquilization.

4. Rest is the great encourager of repair as well as growth; repair to the exhausted force of the woman, thus assisting the proper growth of the unborn child.

5. Pain long continued is dangerous, particularly to those not well endowed by nature for the bearing of pain, and as we never think of ignoring the element of shock in our surgical injuries, no more should we ignore it in the parturient state.

6. The rasping destructive injury to the grosser tissues of the human body are often observed by all surgeons. The more complete the surgical management of the case, the completest possible rest after the injuries favors the completest healing, and yet scars may remain.

7. We should save the nervous systems of the mothers of the world from the rasping, destructive traumatisms produced by labor, and at the same time we should favor rapid repair, never losing sight of the fact that while the healing may be complete, scars yet remain, and in nerve tissues are much more difficult to recover from and are accompanied by greater interference with proper performance of function than in other more vulgar tissues.

8. Balmy sleep is not only "tired nature's sweet restorer," but also the restorer of burdened, fretted, fagged out, wounded, wrecked nerve structures.

9. Graves, the great Irish physician only asked that there be placed upon his epitaph, "He fed fevers." Every thoughtful, warm-blooded, scientific and helpful physician might well ask that there be placed upon his tomb the epitaph, "He gave to his beloved sleep; he saved his patient from pain; not recklessly but intelligently, judiciously, thoughtfully, humanely."

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*SATURDAY, AUGUST 26, 1893.*

## JEAN MARTIN CHARCOT.

Throughout the civilized world, wherever the language of medicine is understood, there is sincere regret that Charcot is no more. This distinguished medical man was graduated in medicine at Paris in 1853, and died at Morvan, France, August 17, 1893. He was director of the great Hôpital La Salpétrière at the time of his death, in which institution he had been interne forty years ago. His residence was in the ultra fashionable quarter, the Faubourgh St. Germaine.

He early commenced the study of difficult questions, turning his attention especially to diseases of the liver and spinal cord. The list of his works in the Index Catalogue is a long one, and the less elaborate studies will be found scattered throughout neurological literature.

The current press dispatches from Paris give the following general statement:

"He organized in 1879 an anatomo-pathologic museum, a laboratory with photographic apparatus, hydrotherapic rooms, and began with a series of lectures a clinical course on nervous diseases which has been translated into all the living languages. In 1883 he was a member of the Académie des Sciences, a member of the Clinical Society of London, and frequently received applications for consulting visits from the courts of Europe.

Locomotor ataxia, St. Vitus' dance, hysteria, hypnotism, an infinity of disorders and apparently mysterious effects, received from his patient investigations unexpected enlightenment. His pupils adored him. Marks of distinction were literally showered upon him from sovereigns and learned societies of all nations.

He retained an admirable faith in science, despite the disillusions which were inevitable. He found pleasure only in the thought that he might contribute a stone to the mysterious edifice which would be completed in the distant future.

He published in 1853 "Etudes pour servir à l'histoire de l'affection décrit sous le noms des nodosities des jointures, goutte Asthenique primitive, rheumatisme articulaire Chronique," and in 1857, "De L'Expectation en Médicine;" in 1860, "De la Pneumonie Chronique;" in 1867, "La Médicine Empirique et a Médicine Scientifique," a parallel between ancient and modern methods; in 1868, "Leçons Cliniques sur les Maladies des Vieillards et les Maladies Chroniques;" in 1873, "Leçons sur les Maladies du Système Nerveux;" in 1875, a second edition, with plates and figures, of his work on the diseases of the nervous system; in 1877, "Leçons sur les Maladies du Foie, des Voies Biliaires et des Reins," and numerous essays in the *Archives de Physiologie*, of which he was a director.

His capacity for incessant labor was amazing. In 1878 he produced the "Iconographie Photographique de la Salpétrière;" in 1880, a great treatise on "Les Maladies du Cerveau;" in 1881, a study of "L'Albuminurie;" in 1884, another great work on the nervous system; in 1887, in collaboration with Richer, one of his pupils, who was a skillful artist and is a famous physician, "Les Démoniaques dans l'Art."

There is not a serious work on nervous diseases which is not studied with references to Charcot. There is not a practicing physician at the present time free of indebtedness to the lessons of Charcot."

And to American physicians, it may be added, a visit to Paris will not be the same since Charcot has gone. His mastery of his chosen field, his genial manner, his welcome to strangers and his wonderful diagnostic powers, caused him to be much sought by foreigners, and his decease leaves a vacancy not easily filled.

## STUDIES OF HEREDITY.

The recent translation and publication of Prof. Weisman's essays upon heredity and kindred biological problems, has opened anew the very interesting controversy which has centered about his theories. Dr. Weisman is a professor of physiology and biology at the University of Freiburg, who has for many years made very exhaustive studies of the problems of heredity. His conclusions differ widely from many of the popular theories, and are considered the most scientific and candid studies published. In some of his last essays he points out the errors of his former theories, and the way in which he made them, and asserts that all scientific facts depend on theories which are frequently found to be wrong, and are given up for more accurate hypothesis.

He affirms that theories alone are valueless without a firm basis of facts, and that a collection of facts without some theory of coherence or relation are worthless. Theories are plummets with which to sound the depths of the ocean of unknown phenomena. He claims that his theories of heredity are supported by the present knowledge of this subject, but are open to revision and correction from further study and research.

One of these theories is that the reproductive germ cells are practically immortal and are transmitted from generation to generation without variation. The substance of the germ cells, the germ-plasma, has remained in perpetual continuity from the first origin of life. The extreme variations to which the organism is subjected, do not alter the germ cells, and reappear in the next generation. The germ plasm or substance of the reproductive cells continues the succession of the species; while natural selection and chemical fluctuations of the molecules of the organism vary widely, changing the individual. Hence the transmission of acquired characters is impossible, for the germ plasma is not formed anew in each individual. He believes that heredity depends on the fact that a small portion of the effective substance of the germ plasm remains unchanged during the development of the ovum into the organism, and this part of the germ plasma serves as a foundation from which the germ cells of the new organism are produced. The germ plasma may be represented as a root stock from which plants arise at intervals, representing the individuals of successive generations. This germ plasma is derived from that which preceded it, and its molecular constitution can not depend upon the individual in which it happens to occur, but such individuals only form the nutritive soil at the expense of which the germ plasma grows. The tendency of heredity of which the germ plasma is the bearer, depends upon this very molecular structure, and hence only those characters can be transmitted through successive generations which have been previously inherited, viz., those characters which were potentially contained in the structure of the germ plasma. It also follows that those other characters which have been acquired by the influence of special external conditions during the lifetime of the parent cannot be transmitted at all.

These conclusions are studied and exemplified in a very conclusive way. The re-appearance of like qualities of parents in the children are explained by environment, nutrition, natural selection and other forces. He urges very emphatically that mutilations and organic defects of the body can not be transmitted, because contrary to the doctrine of survival of the fittest.

The natural tendency is to eliminate and throw out the defectives and degenerates from injury and disease, and it would be opposed to nature to perpetuate them to the next generation.

Lessened vigor, and incapacity to resist adverse influences appear in the children followed by early death. The direct transmission of disease germs which fasten themselves to the sperm or germ cell, and are thus transmitted from one organism to another, are proved to be highly probable facts. The disease of the silkworm is transmitted in this way, and the tuberculosis, syphilis, and smallpox germs, may in all probability follow the same law of transmission. Artificially produced epilepsy is explained in certain cases as following direct from microbic origin which is transmitted in this way. The two parental germ plasms are very complex substances, and consist of a number of ancestral germ plasms of different proportions, which combine in different degrees of strength. From these combinations different ancestral forces are increased or retarded; along this line, natural selection separates and breaks up, or perpetuates the germ cells.

Many of these studies and theories have an intense interest to every physician. The author has an exceedingly frank way of presenting his conclusions, and the apparent facts on which they are based; claiming only their probable correctness, and inviting the reader to join with him in farther study. It is evident to the reader that these complex biological theories, are no more fanciful than those which daily confront him in the practice of medicine. Also, if the many medical problems were discussed with the scientific breadth and frankness of this author, we should have less to unlearn and put aside in daily study.

## THE YELLOW FEVER.

On the morning of the 10th August the country was startled by the announcement of two deaths from yellow fever having occurred in Pensacola. On July 22 the Spanish steamship *Leonora* arrived; on the 26th a sailor was taken to the hospital; on 27th a second, on 28th a third, on 29th a fourth. Two were discharged, and by the 1st August the two remaining cases had developed into yellow fever; the vessel was then sent to the Gulf Quarantine Station.

This was practically the first announcement for years that the disease had passed beyond the quarantines. The arrival of vessels infected with yellow fever at points on the Gulf and at South Atlantic ports has occurred almost weekly for the last eight weeks. The announcement of the deaths at Pensacola was made by the Board of Health, and even if the Board were mistaken in one case, at least one of the cases was regarded as suspicious by some of the best yellow fever experts in the country. Being thus authenticated, it naturally created a panic and an exodus from the place of all those who could get away; with the consequence of the quarantine of other cities and States against Pensacola; and it looked for a day or two as if the country was going to suffer from "shot gun quarantine" and the horrors incident thereto. The action of the Pensacola Board of Health was in striking contrast with the action of similar bodies previous to 1884, when as a rule efforts were made to hide the existence of a disease, and yellow fever was not pronounced epidemic until more deaths occurred in a week from that disease than from all other causes. One point of the controversy between the

Sanitary Council of the Mississippi Valley and a Board of Health was the non-reporting of the existence of cases in a certain locality, thereby causing a quarantine by that organization against that place.

The States in the Sanitary Council organization in April, 1879, agreed to promptly report the first cases of yellow fever. The American Public Health Association also adopted a like measure in 1884. It was not, however, until DR. JOSEPH HOLT became President of the Louisiana State Board of Health that the custom became general, as he announced promptly all authenticated and even suspicious cases.

The situation was intensified a few days after the Pensacola affair, by the announcement that DR. BRANHAM of the Marine Hospital Service had yellow fever at Brunswick, Georgia. Late in June the captain of the bark *Anita Berwind*, died of yellow fever on Satila river, near Brunswick. DR. CARTER, of the Marine Hospital Service was sent there to prevent its spread. DR. BRANHAM relieved DR. CARTER, and soon after was attacked by the disease, and on Aug. 19, died. The last time Brunswick suffered from yellow fever (1875) the first death occurred on August 20th. The most experienced yellow fever experts have been in charge for the last two weeks and every possible precaution has been taken to prevent the spread of the disease. As we go to press the dispatches announce another case of yellow fever at Brunswick, and a general exodus from that place in progress.

The highest point north that yellow fever has occurred in the valley of the Mississippi was in August 1854, when a patient came up the river on a steamer from New Orleans to Rock Island, and two nurses who attended him contracted the disease and one of them died. Going farther south in 1873, four railroad laborers at Centralia, who were transferring hides which had been sent from Shreveport, where yellow fever had prevailed, were attacked by the disease. In 1878, one hundred and five refugees from the yellow fever districts suffered with yellow fever in different parts of the State north of Cairo; of these there were twenty-four deaths, the greater portion of them occurring in the city of Chicago—and in not a single instance did those who attended them contract the disease. In that year a number of the attendants at the quarantine station below St. Louis contracted the disease. It is a well established fact that yellow fever will not spread unless there has been a continuous mean temperature of upwards of 70° for some considerable time. It is safe to assume from the experience of the past and judging by the temperature, that yellow fever will not spread this time anywhere north of St. Louis and by September 1st, anywhere north of the Ohio river. Fortunately for the State of Florida, and for the country, that State now has a State Board of Health, and a State health officer of great experience and untiring energy.

## ANIMAL EXTRACTS IN EARLY MEDICAL ANNALS.

The modern use of prepared animal organs and animal extracts has probably not yet attained to such therapeutic rank as would lead the Committee on Revision to introduce this distinct class of remedies into the National Pharmacopœia. And yet for such action respectable authority and precedent are not wanting, since in the Dispensatory made by the "College of Physitians" of London, as we learn from the famous edition of "NICH. CULPEPER, Gent. Student in Physick," (of which the second edition was published in 1650), there was an entire section devoted to "Parts of Living Creatures and Excrements," from which possibly some *fin de siecle* clinician might even now obtain a few available hints that might direct his investigations for new specifics, as he will find some curious precedents for those lately brought into use. Thus *Cerebrine* is anticipated in the following: "The brain of Sparrows being eaten provoke lust exceedingly." "The brain of a Hare being rosted helps trembling; it maketh children breed teeth easily, their gums being rubbed with it; it also helps scaldheads and falling off of hair, the head being anointed with it." BROWN-SEQUARD'S *Spermine* is suggested by this note: "Cocks' stones nourish mightily, and refresh and restore such bodies as have been wasted by long sickness; they are admirable good in Hecktick fevers, and (GALEN'S supposed incurable) Marasmus, which is a consumption attending upon a Hecktick fever; they encrease seed and help such as are weak in the sports of Venus." The next is of similar but more potent character: "The yard of a stag helps fluxes, the bitings of venomous beasts; provokes urine and stirs up lust exceedingly." *Cardine* is possibly prefigured in this paragraph: "The bone that is found in the heart of a Stag is as soveraign a Cordial, and as great a strengthener to the heart as any is, being beaten into a powder and taken inwardly; also it resists pestilences and poison." The next might be termed *Pneumonine*: "The lungues of a Fox well dried (but not burned) is an admirable strengthener to the lungues; see the Lohoch of Fox lungues." *Hepatine* is forestalled as follows: "The liver of a Duck stops fluxes and strengthens the liver exceedingly. The liver of a Frog being dried and eaten, helps quartan agues, or as the vulgar call them third-day agues." The next might be termed *Vesicine*: "A Sheep's or Goat's bladder being burnt, and the ashes given inwardly helps the *Diabetes*, or continual pissing." Among the peculiar remedies may be noted "Unicorn's horn;" "the head of a cole-black Cat, burnt to ashes in a new pot;" "the skul of a man that was never buried" beaten to a powder and given inwardly; "the fat of a man" used as an ointment and powdered Mammary for internal use.

Suggestions are made elsewhere with regard to the use of centipedes, woodlice, earthworms, land scorpions, grashoppers, the flesh of vipers, for various morbid states, with much apparent confidence in their alleged virtues.

Another work which appeared about the same time as the preceding, was, "Health's Improvement; or Rules Comprizing and Discovering the Nature, Method and Manner of Preparing all Sorts of Food used in this Nation." It was printed at "The Sign of the White Horse in Paul's Churchyard 1655," and was written by "that ever famous THOMAS MUFFETT, Doctor in Physick," but it did not appear until after the death of the author, when it was corrected and edited by CHRISTOPHER BENNET, doctor in Physick and Fellow of the College of Physitians in London." From this interesting work we will take but two therapeutic hints: "Pithmarrow running all along from the hinder brain (whereof no doubt it is a portion) to the end of the backbone or chine of beasts, is no doubt much harder and drier than the brain itself, especially towards the further end of the back; which dryness makes it less loathsome to the stomach than brains are; yea, furthermore, it strengtheneth that body which is able to concoct it. Many are of opinion that Cawdles made strong with the pitte of a Steer and yolks of newlaid eggs, do by a secret property restore nature, and recover the weakness of loyns caused by venery. MONTAGNANA maketh a singular confection of divers marrows to that purpose, which I will not set down in English, least wantons be too bold to follow their follies."

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### DISINFECTION OF PHTHISIC SPUTA.

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REMOUCHAMPS (*Revue des Sciences Medicales*, July, 1893), has employed carbonate of sodium in boiling water as a cheap and practical means of destroying the tuberculous contents of spittoons and particularly of handkerchiefs. He demonstrated its efficiency by an experiment as follows:

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# SOCIETY NEWS.

## The Association of Military Surgeons of the National Guard of the United States.

*Abstract of the Proceedings of the Third Annual Meeting, held in Chicago, Ill., August 8, 9 and 10, 1893.*

*(Continued from page 287.)*

THIRD DAY—MORNING SESSION.

DR. CHARLES B. EWING, U. S. Army, read a very interesting paper entitled

THE SELECTION OF THE SOLDIER,

in which he drew the following conclusions:

1. That the rules and regulations governing the examining surgeon in the physical examination of the recruit, be separate and distinct from those that govern the recruiting officer, who is not a medical man.
2. That the room in which the examinations are made should not be less than twenty feet square, well lighted and ventilated.
3. That the unit of measure be as small as possible, and that the metric system be used.
4. That the recruit be measured in the horizontal instead of the upright position, as at present, so that the large number of men now rejected as being below the standard be saved to the service.
5. That this method of measurement be used so that the exact value of height be obtained in its relation to the other physical equivalents of age, as they are governed by nativity.
6. That weight be determined by a uniform system, the

use of centipedes, woodlice, earthworms, land scorpions, grashoppers, the flesh of vipers, for various morbid states, with much apparent confidence in their alleged virtues.

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THE SELECTION OF THE SOLDIER,

in which he drew the following conclusions:

1. That the rules and regulations governing the examining surgeon in the physical examination of the recruit, be separate and distinct from those that govern the recruiting officer, who is not a medical man.
2. That the room in which the examinations are made should not be less than twenty feet square, well lighted and ventilated.
3. That the unit of measure be as small as possible, and that the metric system be used.
4. That the recruit be measured in the horizontal instead of the upright position, as at present, so that the large number of men now rejected as being below the standard be saved to the service.
5. That this method of measurement be used so that the exact value of height be obtained in its relation to the other physical equivalents of age, as they are governed by nativity.
6. That weight be determined by a uniform system, the

metric, and that the apparatus consist of scales of the simple bar and weight pattern rather than the old style.

7. That special pains be taken to fix the physical equivalent, so that its proper relation to height, weight and age can be determined for each separate nationality.

8. That the chest girth be changed to conform to the present standard of weight and height.

9. That special attention be given this, so that proper ideas may be obtained in the relations of this physical equivalent of weight, height and age, as it affects each particular race in this country.

10. That data be collected from our present statistics in relation to age, weight, chest girth, chest expansion and capacity, of each separate nationality, so that a better and more exact basis of selecting the recruit can be made.

11. That the spirometer or some modification of it be used as an aid in determining vital chest capacity, also that calipers be authorized so as to measure depth of chest.

12. That the present method of determining hearing be modified.

13. That the test for vision be changed, and that the prisoptometer be placed in general use for the determination of simple refractive defects.

14. That it be no longer obligatory to determine with such exactness the age and size of piles, but that this condition be left to the discretion of the surgeon.

15. That the paragraph relating to varicocele be expunged, as our present instruments of precision can not measure the fine pathological distinctions insisted upon.

Dr. Frank R. Keefer of Fort Stanton, N. M., contributed a paper entitled "Observations on the Physical Examination of Recruits," which was referred to the Committee on Publication, without being read, in the absence of the author.

### Third Day—Afternoon Session.

At this session it was decided to publish a monthly Military Medical Journal, to be devoted to the professional interests of the Army, Navy, Marine Hospital Service and National Guard of the United States. The publishers to be the F. A. Davis Company of Philadelphia.

Dr. Charles Smart, U. S. Army, contributed a paper on

### THE MEDICAL DEPARTMENT OF THE ARMY,

which was read by Dr. B. J. D. Irwin, U. S. Army, in the absence of the author.

The great war of the rebellion demonstrated that an efficient system for the care of the wounded was one of the grand divisions of military sanitation, and continued efforts have been made to build up our methods on the foundation of experience which was then gained; that war enlarged our views, and it lasted long enough to enable us to develop a system based upon the enlargement, and to show us what was needful to the successful carrying out of the system. We began the war with methods that were borrowed from Europe. We ended with methods that were developed by the cries of our wounded for relief.

In 1887 a law was passed establishing a hospital corps, and since then the best energies of the department have been devoted to perfecting the organization of this corps and formulating methods by which it will accomplish its work, not only under conditions of peace, but under those of Indian or of modern warfare.

A paper was read on

### *THE DIAGNOSIS TAG IN THE FIELD,*

by Dr. Valery Havard, U. S. Army. The diagnosis tag conspicuously fastened to the clothing of the patient shows at once that he has already received first aid. The brief entries written upon it give further information as to the identity of the patient, the nature of the disability, and the treatment pursued. But these entries, doubtless written in a hurry, are perhaps not very legible; they may have been defaced by blood, rain or dirt, hence the necessity of using a tag that will give as much information as possible at a glance and independently of any writing upon it. For this purpose colors seem to be most useful. In the French, German, Italian, and perhaps other European armies, two kinds of tags are described, one white, the other red. The white tag denotes that a patient is so desperately wounded as not to be transportable; the red, that the patient can stand transportation. Thus, a look at the tag gives an idea of the gravity of the injury, and to some extent of what can be done with the patient. The author's tag consists of a white and two colored borders; on the body are the printed headings of the entries to be made; the borders are separated from the body by a perforated line so as to admit of being very easily torn off. The left border is red, and the right blue. On the red is printed "transportable," and on the blue "not transportable." In case of a simple flesh wound, whether the patient is or is not able to walk, both colored borders are torn off, leaving only the white body of the tag. If a man is severely wounded, unable to walk, but able to be transported, the blue border is torn off, leaving the red. If a man is desperately wounded and cannot be moved without extreme danger to life, the red border is torn off leaving the blue.

Dr. Lawrence C. Carr of Ohio National Guard, Cincinnati, followed with a paper on

### THE QUALIFICATIONS FOR AND THE STATUS OF A MEDICAL OFFICER IN THE NATIONAL GUARD.

He said but two States in the Union required any qualification from a surgeon of the National Guard. All that is necessary in the other States is for the commanding officer to suggest the name of some one in his discretion to the Governor. Another factor was the great lack of courtesy from the heads of the military departments of different States to officers in other States, tending to impair the service. It does not seem to be the policy of the War Department at present to allow the regular service and the National Guard to come in contact.

Dr. Charles E. Woodruff, U. S. Army, read a paper entitled "Military Medical Problems."

Dr. A. H. Ohmann-Dumesnil of St. Louis, Mo., read a short paper on

### THE PREVENTION OF CUTANEOUS PARASITIC DISEASES IN SOLDIERS,

in which he said the recruit should take a full bath and after this a careful inspection of his body made. His hair should be cropped close and always kept so. His clothing should be changed as often as compatible with circumstances, and should not only be washed but subsequently subjected to dry heat so as to thoroughly sterilize it. Such as operation can be easily carried out and will insure thorough cleanliness. The bath should be taken at least once a week, and upon each occasion the surgeon should inspect the soldier before he is permitted to assume his clean clothing. After the bath a light sponging of the entire body, scalp and face should be made with some antiseptic. Under no excuse should soldiers be permitted to escape the bath, disinfection and subsequent inspection. Infected cases should be treated immediately and segregated, thus removing to a distance the focus of infection. The observance of some such method would practically free a body of soldiers of filth, vermin and parasitic disorders, and, at the same time contribute to making them more alert, attentive to their duties, more efficient and cheerful and correspondingly better disciplined.

The last paper on the program was read by Dr. George H. Halberstadt of Pottsville, Pa., entitled "Camp Cooking Stoves."

The following officers were elected:

*President*—Col. N. Senn of Chicago.

*First Vice-President*—Col. B. J. D. Irwin, U. S. Army.

*Second Vice-President*—Col. Louis W. Reed, of Norristown, Surgeon General of Pennsylvania.

*Secretary*—Col. E. Chancellor of St. Louis, Mo.

*Treasurer*—Major Lawrence C. Carr of Cincinnati, O.

A vote of thanks was extended to the Illinois State National Guard, to Dr. and Mrs. Senn for the admirable manner in which they entertained the members of the Association; after which the Association, on motion, adjourned to meet in Washington, D. C., the first Tuesday in May, 1894.

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**American Electro-Therapeutic Association.**—The following is the preliminary program of the American Electro-Therapeutic Association, which will hold its third annual meeting in Chicago, September 12, 13, and 14:

*Discussions:*—1. "What are the Possibilities of Electricity in the Treatment of Fibroid Growths." Discussion will be opened by Dr. J. H. Kellogg of Battle Creek, Mich. The following among others have been asked to take part: M. le Docteur Georges Apostoli of Paris; M. le Docteur Georges Gautier of Paris; Dr. La Torre of Rome; Dr. Augustine H. Goelet of New York; Dr. A. Lapthorn Smith of Montreal; Dr. Franklin H. Martin of Chicago; Dr. Margaret A. Cleaves of New York; Dr. G. Betton Massey of Philadelphia; Dr. George F. Hulbert of St. Louis; Dr. E. L. H. McGinnis of New York.

2. "The Influence of Frequency of Interruptions and Character of Induced Current Waves upon Physiological Effect." Discussion will be opened by Professor J. W. Morton of New York. The following among others have been asked to take part: M. le Prof. d'Arsonval of Paris; Prof. Du Bois Reymond of Berlin; Mr. Newman Lawrence of London; M. le Docteur Larat of Paris; Prof. Edwin J. Houston of Philadelphia; M. le Docteur Apostoli of Paris; M. G. Weisse of Paris; Dr. W. J. Herdman of Ann Arbor, Mich.; Mr. J. J. Carty of New York; Dr. J. H. Kellogg of Battle Creek, Mich.; Dr. A. H. Goelet of New York; Dr. S. Weir Mitchell of Philadelphia; Dr. A. D. Rockwell of New York; Dr. Frederick Peterson, of New York; Dr. W. F. Hutchinson of Providence, R. I.; Dr, Georges Gautier of Paris; Dr. Franklin Martin of Chicago.

*Papers:*—"The Nutritional Effects of Statical Electricity." By Prof. W. J. Morton, M.D., New York.

"Electro-Medical Eccentricities." By Newman Lawrence, M.I.E.E., London, England.

"The Graphic Study of Electrical Currents in Relation to Therapeutics." By J. H. Kellogg, M.D., Battle Creek, Mich.

"The Action of the Continuous Current within the living Tissues as distinguished from the local Polar Action." By Prof W. J. Herdman, M.D., Ann Arbor, Mich.

"The Therapeutic Application and the Theory of Alternating Currents." By Dr. Georges Gautier, Paris, France.

"The Treatment of Fibroid Tumors with Electricity" By Dr. Georges Gautier, Paris, France.

"Induction Coils." By Mr. A. E. Kennelly, of the Edison Laboratory.

"Electrolysis in Tumors of the Bladder." By Robt. Newman, M D., New York.

"The Present Position of Electricity in the Treatment of Ectopic Gestation." By A. Brothers, M.D., New York.

"Electro-Therapeusis in Salpingitis." By W. B. Sprague, M.D., Detroit, Mich.

"Report of a Case of Ascites cured by Galvanism." By Holford Walker, M.D., Toronto, Canada.

"The Primary Action of the Galvanic Current on the Blood. It increases the amount of Ozone it contains, as shown by Chemical Tests of the Blood in the Arteries." By J. Mount Bleyer, M.D., and M. M. Weil, M.D., New York.

"The Conservation of Energy as a Successful Factor in Electrotherapy." By Horatio R. Bigelow, M.D., Philadelphia.

"Synovitis treated by Cataphoresis." By F. H. Wallace, M.D., Boston, Mass.

"The Use of Static Electricity in the Treatment of Incipient Insanity." By W. F. Robinson, M.D., Albany, N. Y.

"Further Study of Electrical Anæsthesia and Frequency of Induction Vibration." By W. F. Hutchinson, M.D., Providence, R. I.

"The Absorption of Fibroid Tumors by Mild Electric Currents." By R. J. Nunn, M.D., Savannah, Ga.

"Some Observations on the Fine Wire Coil or Current or Tension." By H. E. Hayd, M.D., Buffalo, N. Y.

"The Treatment of Subinvolution by Electricity." By C. G. Cannaday, M.D., Roanoke, Va.

"Successful Treatment by Electrolysis of four additional Cases of Œsophageal Stricture with Exhibition of Two Cases." By D. S. Campbell, M.D., Detroit, Mich.

"The Treatment of Dysmenorrhœa by the Galvanic Current." By A. Lapthorn Smith, M.D., Montreal, Canada.

"Notes upon some Uses of Galvanism in Surgery." By W. B. D. Beaver, M.D., Reading, Pa.

Several other papers of equal interest have been promised, but the papers have not yet been received.

MARGARET A. CLEAVES, *Secretary.*

## Pan-American Medical Congress.

WASHINGTON, D. C., August, 1893.

The Transportation Committee of the Pan-American Medical Congress, which meets in Washington, D. C., September 5th to 8th, 1893, makes the following announcement in regard to reduced rates for delegates and members of their families from all sections of the United States, also from the Pacific Coast, Ports of Mexico and Central America:

Delegates from the territory of the Trunk Line Association east of Pittsburgh and Erie and Buffalo, will be accorded one and one-third fare for the round trip on the certificate plan.

The lines combined in this territory are as follows:

Grand Trunk Ry., N.Y.C. & H. R. Rd, West Shore Rd., D. L. & W. Rd., N.Y.O. & W. Ry., Pennsylvania Ry., Cent. Rd. of N. J., Ches. & Ohio Ry., Lehigh Valley Rd., N.Y.L.E. & W. Rd., Balto. & O. Rd., Phil. & Read. Rd.

Delegates from points in New England States in the territory of the New York and Boston Lines Passenger Associations, will be accorded one and one-third fare on the certificate plan.

Delegates from points in Central Traffic Association, embracing the territory from Buffalo, Pittsburg and Parkersburg, W. Va., in the East to Chicago, and St. Louis on the West will be accorded one fare and one-third on the certificate plan.

Delegates from points in Southern Passenger Association, embracing the territory South of the Ohio river and Potomac river and East of the Mississippi river will be granted one and one-third fare on the certificate plan.

Delegates from points west of the territory of the Central Traffic Association can avail themselves of the World's Fair excursion tickets as far as Chicago and secure from Chicago the fare and a third on the certificate plan to Washington.

Delegates from South America, Pacific Coast, points of Mexico or Central America, can secure from point of starting round trip tickets to Chicago at the World's Fair rate, either by way of San Francisco or New York. The latter can secure from New York the fare and a third on the certificate plan on application to the ticket offices of either the Penn. R.R. or B. & O. R.R.

The certificates referred to must be secured at the time of the purchase of the ticket to Washington on which, properly signed by Dr. H. L. E. Johnson, Chairman of the Transportation Committee, the reduced rate will be allowed returning. To be more specific the full fare is paid on the going trip to Washington and a two-thirds reduction is allowed when the ticket is purchased in Washington for the return trip. These certificates must be obtained at the ticket offices at the time the ticket is purchased. Be sure to state that you are a delegate and will be in attendance at the meeting. Respectfully, yours,

DR. H. L. E. JOHNSON,
Chairman, Committee Transportation.
1400 L Street, N. W. Washington, D. C.

## The Journal Train.

Office of
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
CHICAGO, August 21, 1893.

*To Delegates and Their Friends:*—

The Pan-American Medical Congress will convene in *Washington, D. C.,* September 5.

The Pan-American train from Chicago and the northwest, run under the auspices of the JOURNAL, will leave Chicago, 8:30 A.M., Sunday. September 3, via Big Four from Central Station, 12th Street and Park Row. The train will consist of palace sleeping cars, and run through without change via the popular Big Four and the picturesque Chesapeake & Ohio railways, passing through Indianapolis, where the Indianapolis, Peoria and St. Louis delegations will join the train, and at Cincinnati that delegation will also join the train.

*Excursion Rates.*—A rate of one and one-third fare on the certificate plan has been authorized. Any person attending the Congress can get this rate, Buy a first-class limited ticket to Washington, and take a certificate from ticket agent at starting point, stating you have paid *first-class* fare going, and when properly signed by the Secretary of the Congress it will entitle you to one-third fare returning.

Persons going via Chicago should buy excursion tickets to Chicago and purchase Washington tickets there.

Be sure that your ticket reads, via the Big Four and the Chesapeake & Ohio Railway, Chicago office, 234 Clark street. Rates always as low as via any other route. Leave Chicago. Big Four railway, 8:30 A.M.; leave Indianapolis, Big Four railway, 2:55 P. M.; leave Cincinnati, Chesapeake & Ohio railway, 6:15 P. M.; leave Clifton Forge, Eastern time, 7:23 A. M.; arrive Washington, Eastern time, 2:10 P. M.

*The Route.*—The service and equipment of the above roads are unsurpassed; all trains are vestibuled, and gas and electric lighted. Dining car service through. The Chesapeake & Ohio is one of the most picturesque routes in America, and passes through 300 miles of river, mountain and canon scenery, unequaled, and from Charlottesville to Washington it passes over a dozen or more of the most noted battlefields of the late war, and through many famous health resorts in the Blue Ridge and Allegheny mountains where stop-over will be granted returning.

Please notify the undersigned at your early convenience if you will make the trip and what sleeping car accommodations you desire.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
68 Wabash Ave., Chicago,
or "Big 4" office, 234 Clark St

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## PAN-AMERICAN MEDICAL CONGRESS.

### SECTION ON OPHTHALMOLOGY.

Preliminary Program.—The meeting of the Section will be held in the Arlington hotel. The session of September 6th, will be devoted to the discussion of the subject of the "Detection and Correction of Astigmatism," with the reading of papers upon this subject. The meeting of September 7th will in like manner be given to a consideration of the "Detection and Correction of Muscular Errors." Julian J. Chisolm, Executive President, Baltimore, Md.; George M. Gould, English-speaking Secretary, Philadelphia, Pa.; J. Harris Pierpont, Spanish-speaking Secretary, Pensacola, Fla.

*September 5th, 3 o clock p. m.* "Some Experiences in Hemorrhagic Glaucoma: Its Progress and Treatment." By S. D. Risley, Philadelphia. "Homeochronous Hereditary Optic-nerve Atrophy Extending Through Six Generations." By George M. Gould, Philadelphia. "Suppurative Processes of the Vitreous." By J. F. Fulton, St. Paul. "A Clinical Study of the Visual Field in Hemianopia." By Charles A. Oliver, Philadelphia. "Glaucoma from Traumatic Causes." By E. Lopez, Havana. "Spontaneous Replacement of a Case of Detached Retina." By J. Wallace, Philadelphia. "Etiology and Early Management of Glaucoma." By G. E. Dean, Scranton, Pa. "Acute Monocular Neuro-retinitis, with Cases." By B. L. Millikin, Cleveland.

*September 6th.*—"Further Studies of the Cycloplegic Value of Homatropin and Cocain Discs as a Substitute for Atropin and Hyoscyamin." By Casey A. Wood, Chicago. "The Relation of Skiascopy to other Tests for the Determination of Ocular Refraction." By. H. V. Würdemann, Milwaukee. "The Necessity for Complete Suspension of Accommodation by Mydriatics in the Adjustment of Glasses." By G. C. Savage, Nashville, Tenn. "A Contribution to Refractive Errors." By J. C. Morgan, Philadelphia. "Astigmatism following Cataract Extractions and other Sections of the Cornea." By Edward Jackson, Philadelphia. "A Few Thoughts about Ophthalmometry, as to what the Javal Instrument will do and what it will not." By Louis J. Lautenbach, Philadelphia. "Skiascopy in Ophthalmometry." By Pedro Lagleyze, Buenos Ayres,
:al Study of Heterophoria." By Hiram Woods,
of Fifty Cases of Internal Squint." By H. F.
Hansell, Philadelphia. "Some Forms of Anomalies in Eye Muscles."
By E. J. Gardner, Chicago. "Affections of the Nose as a Cause of the
the Eye Muscles." By W. Cheat-
ces in Graduated Tenotomy." By
raduated and Complete Tenotomy
New Objective Test for Use Dur-
Philadelphia.

*September 8th.*—"Treatment of Six Cases of Irido-cyclitis Complicated with Cataract." By Robert L. Randolph, Baltimore. "Electric Therapeutics in Ophthalmic Practice." By L. A. W. Alleman, Brooklyn. "Gouty and Rheumatic Affections of the Eye." By W. Oliver Moore, New York. "The Local Application of Bichloride of Mercury in the Deep Inflamma-
tions of the Eye." By W. F. Mittend
lignancy of the Eyelids." By F. B. T
ture of Blepharitis." By Dudley S
mors." By W. B. Johnson, Paters
cus." By Dr. L. F. Love, Philadelp
Eye of the Negro." By C. W. Kollock, Charleston, S. C. "Hemorrhagic or Croupous Iritis." By A. Alt, St. Louis. "A Case of Cysticercus in the Vitreous." By W. Cheatham, Louisville, Ky.

### SECTION ON PEDAGOGY.

Provisional Program.—*Tuesday, September 5th.*—The President's Address, "Medical Education in the United States." "The Importance of Physiological Chemistry as a part of Medical Education." By R. H. Chittenden, Ph. D., Professor of Physiological Chemistry, The Sheffield Scientific School, New Haven, Conn. "The Importance of Bacteriological Study to Medical Students, and the Scope of Instruction." By Harold C. Ernst, Assistant Professor of Bacteriology in the Harvard Medical School, Boston, Mass.

*Wednesday, September 6th.*—At the close of the General Session 11 A. M.
—" Section and the Porro Operations."
By "A Contribution to a Study of
Me the United States." By Bayard
Ho id Surgeons, Chicago, Ill. "Methods
of F. C. Shattuck, Professor of Clini-
cal " School, Boston, Mass.
T. ose of the General Session, 11 A.M.—
"A Crayon, of Methods of Instruction in
An H. Richardson, Assistant Professor of
An "The Methods of Medical Education."
By Victor Vaughn, Ann Arbor, Michigan. "The Aims and Methods of Medical Education." By W. C. Dabney, University of Virginia.

*Friday, September 8th.*—"The Relation of Biology to Medical Education." W. T. Sedgwick, Professor of Biology in the Massachusetts Institute of Technology, Boston, Mass. "A Demonstration of the Physiological Action of the Heart." By J. P. Sawer, Cleveland, Ohio.

NOTE:—It is intended to obtain the use of an amphitheater for demonstrations of special subjects. Any contribution to the program of the Section, either by paper or discussion, is solicted from those especially interested in the problem of Medical Education.

CHARLES L. SCUDDER, M.D. *English-speaking Secretary,*
Boston, Mass.
WM. F. HUTCHINSON, M.D.. *Spanish-speaking Secretary,*
Providence, R.I.
J. COLLINS WARREN, M.D., *President.*
Boston, Mass.

### SECTION ON MARINE HYGIENE AND QUARANTINE.

Formal Address, by Walter Wyman, Executive President of the Section, Surgeon General of the United States Marine Hospital Service, Washington, D. C. "The Hygiene of Vessels, Commercial and Naval,
Including the Question of V nents,
the Disposal of Cargo so as infec-
tion, Food Supply, etc." (D . Onta-
rio, Canada. "Epidemic and Exotic Diseases Propagated by Shipping, What Diseases Should be Quarantined, Responsibility of Nations for Epidemics; India for Cholera, South America for Yellow Fever. Can a Feasible Plan be Devised to Totally Exterminate Cholera? International Intervention to Prevent the Propagation of Cholera or other Epidemic Diseases by Pilgrimages or Immigration." (Discussion Opened by Wolfred Nelson, New York City.) "International Uniformity in Quarantine Regulations." (Discussion Opened by Juan J. Ulloa, San Jose, Costa Rica.) "The Medical Officers of Passenger Vessels; Methods for their Selection, Duties, etc." "The Vital Statistics of Seamen and Firemen. The Question of the Medical Examination of Crews Preparatory to Shipping." "The Supervision of Vessels by Government Medical Inspectors at Ports of Arrival and Departure. Code of Rules for Handling an Epidemic Disease that Breaks out on Shipboard. Disinfection of Passengers and Crew During a Voyage. Location and Arrangement of Ship's Hospitals." "Arrangement of Detail and Equipment of Quarantine Stations: *a*, Inspection Stations; *b*, Local Quarantine Stations; *c*, Refuge Stations. Methods for Handling Infected or Suspected Vessels Interstate and Inland Quarantine. Sanitary Cordons; Camps of Refuge; Camps of Probation. Recent Improvements in Hospitals for Infectious Diseases, Railroad Inspection and Quarantine. Length of Time Vessels Should be Held in Quarantine. Conditions that Should Determine
Proclamati untry." "Under what Require-
ments may n Between a Port Infected with
Yellow Fev United States During the Sum-
mer with the Least Obstruction to Such Traffic." "What Merchandise Should be Considered as Requiring Treatment if Shipped from a Port or Place Infected with Cholera, Yellow Fever or Smallpox?" "Methods of Disinfection: *a*, Persons; *b*, Baggage; *c*, Cargoes; *d*, Vessels. Recent Improvements in Quarantine Appliances; Steam Chambers; Sulphur Furnaces. Liquid Sulphur Dioxide as a Disinfectant. Treatment of Ballast Water; Solid. What Time Should an Infected Vessel be Detained in Quarantine? *a*, For the Cholera; *b*, For Smallpox; *c*, For Typhus Fever; *d*, For Plague; *e*, For Yellow Fever. Methods of Disposal of the Bodies of those that Die While in Quarantine."

### SECTION ON RAILWAY SURGERY.

Formal Address, by C. W. P. Brock, Executive President of the Section, Richmond, Va. "Railway Surgery, as a Branch of the Surgical Art," by E. R. Lewis, Kansas City, Mo. "The Nose and Throat Service of the *Missouri Pacific Hospital for 1892,*" by Hanau W. Loeb, St. Louis, Mo. "The History of Railway Surgical Organization," by C. B. Stemen, Ft. Wayne, Ind. "Hot Water in Contusion of the Bones of the Foot and Ankle," by Geo. Chaffee, Brooklyn, N. Y. "Excision of Shaft of Femur following Pathological Fracture," by Alex. J. Mullen, Michigan City, Ind. "Implantation of Senn's Decalcified Bone. Recovery," by B. F. Wilson, Slater, Mo. "The Essential Elements of Ideal Surgery," by B. F. Wilson, Slater, Mo. Paper by T. C. Kennedy, Shelbyville, Ind. Paper by J. N. Warren, Sioux City, Ia. "The Torsion of Arteries for the Arrest of Hemorrhage," by J. B. Murdoch, Pittsburgh, Pa.

### SECTION ON DERMATOLOGY AND SYPHILOGRAPHY.

"American Dermatology," by A. H. Ohmann-Dumesnil, Executive President of the Section, St. Louis, Mo. "Lupus, its Excision with Reports of Cases," by B. Merrill Ricketts, Cincinnati, O. "Glycosuria as an Additional Symptom in the Neurotic Origin of Dermatitis Herpetiformis," by James M. Winfield, Brooklyn, N. Y. "A Statistical Record of Nearly Five Thousand Cases of Smallpox," by Wm. M. Welch, Philadelphia, Pa. "The Treatment of Diseases of the Nails," by J. V. Shoemaker, Philadelphia, Pa. "Primary Dystrophies of the Skin," by E. Preble, Cleveland, Ohio. Paper by Geo. Holsten, Brooklyn, N. Y. "Rhinophyma," by Wm. Gottheil, New York City. "Rhinophyma," by
Louis, Mo. "Framboesia" "Yaws," by
West Indies. "The Question of the Com-
y Beaven Rake, Trinidad, West Indies.
sions in Leprosy," by Beaven Rake, Trin-
idad, West Indies. "Beriberi en el Cauca," by Evaristo Garcia, Cali, Cauca, Colombia. "Lepra en el Cauca," by Evaristo Garcia and Adolfo Tenoris, Cali, Cauca, Colombia. "El Caratea," by Juan N. Wallis O., and Alfredo Garces y Domingo, Arboleda, Colombia. "A Case of Recurrent Pruritus," by A. H. Ohmann Dumesnil, St. Louis, Mo. "On the Etiology of Eczema," by A. Ravogli, Cincinnati, O.

### SECTION ON GENERAL AND ORTHOPEDIC SURGERY.

Address by the Executive President.

"*The Treatment of Potts' Disease of the Spine,*" by A. B. Judson, New York, N. Y. "The Probable Cause of Limp in the First and Second Stages of Hip Joint Disease," by Harry M. Sherman, San Francisco, Cal. "Mechanical Treatment of Osteo-Arthritis of the Knee," by Henry Ling Taylor, New York, N. Y. *Paper by Dr. Bernando Herrera, Caracas, Venezuela.* Paper by Dr. Juan M. Escolana, Caracas, Venezuela. "Ununited Fracture," by Llewellyn Eliot, Washington, D. C. "Some Points in the
Surgical " by Augustus P. Clarke, Cambridge,
Mass. " r Surgeons," by Edw. A. Tracy, Bos-
ton, Mas ." by Thomas G. Maghee, Rawlins,
Wyo. "Urethral Polypus in the Male," by R Menocal, Havana, Cuba. "Simplicity in Surgery," by Robt. W. Johnson, Baltimore, Md. "A Report of Four Cases of Brain Surgery," by Andrew J. McCosh, New York N. Y. "Soudas y Bujras Gercas del Dr. Castano," by Dr. Alberto Castano,
Paper by Ignacio Placencia, Havana,
Havana, Cubh. "Tratamients qui-
undo B. Mateo, Havana, Cuba. "In
what Class of Cases is Drainage Required?" by H. O. Marcy, Boston,
Mass. "Causation, Pathology and Treatment o
W. Graham, Chicago, Ill. Paper by Dr. Martin
ezuela. Paper by Dr. Miguel A. Leco, Caracas,

Long Traction Hip Splint, with Proper Method of Applying Counter-Extension," by Henry Long Taylor, New York City. "Improved Apparatus for Potts' Disease," by Henry Long Taylor, New York City. "Apparatus for the Correction of Talipes-Equino-Varus and for the Retention of the Corrected Foot," by Henry Long Taylor, New York City. "Practical Orthopedics," by Dr. Noble Smith, London, England. "Observations on the Rotary Lateral Curvature of the Spine, with Special Reference to Etiology and Treatment," by Jacob Teschner, New York City. "Recumbence in the Treatment of Potts' Disease," by John C. Scnapps, Brooklyn, N. Y. "Causes Contributing to Failure in the Treatment of Hip Joint Disease," by A. M. Phelps, New York City. "Some Thomas' Splints with Demonstrations of Principles," by John Ridlon, Chicago, Ill. "Orthopedic Work done at the Vanderbilt Clinic of New York, from January, 1889, to June, 1893," by John Ridlon, Chicago, Ill. "A Case of Acute Arthritis of the Hip of Infants, with some Remarks on the Etiology of the Affection," by Augustus Thornedike, Boston, Mass. "The Orthopedic Treatment of Infantile Paralysis," by L. A. Weigel, Rochester, N. Y. "Gymnastic Apparatus for Scoliosis," by L. A. Weigel, Rochester, N. Y. "Practical Points in the Treatment of Hip Disease," by A. B. Judson, New York City. "The Technique of the Plaster Jacket," by Reginald H. Sayre, New York City. "Club Hand," by Reginald H. Sayre, New York City. "Gastrostomy for Relief of Œsophageal Stricture, by Ernest Laplace, Philadelphia, Pa. "Epithelioma of the Tongue; its Pathology and Treatment," by Lewis Cooper Lane, San Francisco, Cal. "A Contribution to Rectal Surgery and Bloodless Operations on Membranous and Lax Tissues by Means of an Elastic Quilled or Welted Suture," by H. M. Bishop, Los Angeles, Cal. "Hypertrophy of the Prostate," by G. Frank Lydston, Chicago. "The Bacteriological Aspect of Aseptic Surgery," by Robert Reyburn, Washington, D. C. "Laparotomy in the Early Stages of Appendicitis," by I. N. Quimby, Jersey City, N. J. "The Indications Governing the Use of the Various Anæsthetics," by John A. Wyeth.

## SECTION ON HYGIENE, CLIMATOLOGY AND DEMOGRAPHY.

Preliminary Notice.—The Headquarters of this Section will be at the Hotel Richmond, corner of 17th and H streets, N. W., the proprietor of which, Major F. W. Coleman, has kindly offered reduced rates for members of the Section. The opening address by the president of the Sectio [illegible] Tuesday, Sept. 5, at 3:30 P. M., at the meeting place [illegible] by the committee on halls. Regular sessions [illegible] reading and discussion of papers will be held on Wednesday and Thursday, Sept. 6 and 7, from 11:30 A.M. to 1 P.M. and from 3 to 5 P.M., and a final session on Friday, Sept. 8, from 10:30 A.M. to 1 P.M. Through the courtesy of the Surgeon General of the Navy and the Director in charge of the U. S. Naval Museum of Hygiene, that building will be open for inspection by members of the Congress from 10 A.M. to 4 P.M., daily, on Wednesday, Thursday and Friday, Sept. 6th, 7th and 8th.

Albert L. Gihon, M.D., U. S. N., Exec. Prest., Washington, D. C.
Peter H. Bryce, M.D., English-speaking Sec'y, Toronto. Can.
Pedro Jose Salicrup, Spanish-speaking Sec'y, New York City.

"The Climate of Jamaica," by J. C. Phillippo, Kingston, Jamaica. "Les Mesures Prophylactiques Contre les Epidemies," by J. B. Da Lacerda, Rio de Janeira, Brazil. "Practical Measures in the Prevention of Tuberculosis," by Lawrence F. Flick, Philadelphia Pa. "Apuntes Sobre la Patologia del Departmento Fluvial de Loreto," by Leonidas Arendaño, Lima, Peru. "Ojeada Retrospectiva Sobre la Organizacion de la Sanidad en los Ejercitos Españoles," by Felix Estrada y Catoyra. Havana, Cuba. "The Climate of Western North Carolina, with a Consideration of the Relative Value of High and Medium Altitudes in the Treatment of Pulmonary Tuberculosis," by Karl von Ruck, Asheville, N. C. "The Climate of the Santa Cruz Mountains," by James Henry Clark, Jamaica, W. I. "On the Early Detection of Seasonable Climatic and other Treatment of Phthisis," by Charles Denison, Denver, Colo. 'The Distribution of Disease by Isthmian Practice, or the Direct Responsibility of the Republic of Columbia, S. A., in the Burial and Disinterring of the Dead on the Isthmus of Panama," by Wolfred Nelson. New York City. "The Three Climates of Jamaica, B. W. I., its Coast or Tropical, Temperate [illegible]; Jamaica considered as a Winter Island for [illegible] lson, New York City. "A Brief Consideration [illegible] n, as Observed in the Samoan Islands," by Jo [illegible] D. C. "On the Climatology of Egypt," by Dr. Gr [illegible] "Hygiene and Demography of Jamaica," by [illegible] Kingston, Jamaica. "The Need of Researc [illegible] by J. M. Postle, Hinckley, Ill. "The Effect [illegible] Disease," by W. J. Moody, Plainfield. Iowa. [illegible] ould be Enacted by the Several States by [illegible] thorities may be Enabled to Control Infecti [illegible] and Prevention of Diphtheria;" "The Limitation and Prophylaxis of Tuberculosis;" "The Role of Municipal Sanitation in the Limitation and Eradication of Yellow Fever;" "On the Climatology of Mesopotamia," by John Sundberg. U. S. Consul, Bagdad, Asiatic Turkey. "On the Climatology of Puerto Rico," by Pedro José Salicrup, Secretary of the Section, New York City. Formal Address. by Albert L. Gihon, Medical Director U. S. Navy, Naval Hospital, Washington, D. C.

## SECTION ON OBSTETRICS.

Address by Giles S. Mitchell, Executive President, Cincinnati, O. "Maternity Hospitals and their Results," by Joseph Price, Philadelphia, Pa. "The Axis Traction Principle in Obstetrics," by Joseph Hoffman, Philadelphia, Pa. "The Care of the Pregnant Woman in the First Half of Utero-Gestation," by W. H. Baker, Boston, Mass. "The Hemorrhages of Pregnancy and their Management," by J. O. Polak, Brooklyn, N. Y. "A Study of Placenta Prævia, Especially the Causes of the Hemorrhages," by Sarah Hackett Stevenson, Chicago, Ill. "The Management of the Placenta in Operations for Ectopic Gestation," by D. Tod Gilliam, Columbus. O. "The State of Obstetrics in General Practice," by Eliza H. Root, Chicago, Ill. "The Mechanism of Labor," by J. C. Rutherford, Providence, R. I. "The Induction of Premature Labor," by J. H. W. Chestnut, Philadelphia, Pa. "Aids to Easy Parturition," by A. J. C. Saunier, Chicago, Ill. "Occipito-posterior Positions and their Management," by F. C. Furgeson, Indianapolis, Ind. "The Therapeutic Application of Chloroform in Labor," by J. N. Up [illegible] Management of Some Cases of Difficult Lab [illegible] cinnati, O. "Forceps Delivery," by James [illegible] "The More Frequent Use of Forceps in the [illegible] by Lyman A. Berger, Kansas City, Mo. "The Use and Abuse of the Forceps," by W. Frank Haehnlen, Philadelphia, Pa "Symphyseotomy," by Henri Jacques Garrigues, New York City. "What has Surgery done for Modern Obstetrics," by Thomas Opie, Baltimore, Md. "Recent Surgical Advances and their Relation to Conservati [illegible] olds Wilson, Philadelphia, Pa. "Puerperal P [illegible] their Pathology and Treatment," by J. F [illegible] D. C. "The Pathology and Treatment of Puerperal Infection," by Edward A. Ayers, New York City. "Infection of the Kidneys after Labor," by Barton Cooke Hirst, Philadelphia, Pa. "Puerperal Eclampsia," by J. G. Cecil, Louisville, Ky. "Puerperal Eclampsia," by Theophilas Parvin, Philadelphia, Pa. "Induction of Labor and Accouchment Force in the Preventive Treatment of Eclampsia," by Charles Jewett, Brooklyn, N. Y. "Contribucion al estudio de la Septicemia puerperal," by Antonia Jose Amadeo, Maunabo, Puerto Rico. "A Study of Dystocia," by Salvador Garciadiego, Gaudalajara, Mexico. "A Method of Performing Rapid Manual Dilation of the Os Uteri and its advantages in the Treatment of Placenta Prævia," by Philander A. Harris, Paterson, N. J. "Nota Sobre la Expresion de la Vegiga en la Retencion de Orina Post Partum," by Sebastian Cuervo Serrano, Sancti-Spiritus, Cuba. "The Application of Graphies to the Fœtal Heart Sounds," by Hugh Hamilton, Harrisburgh, Pa. "Compression Uterina," by Jose Maria de Ita, Pueblo, Mexico.

## SECTION ON MEDICAL JURISPRUDENCE.

"*Medical Jurisprudence in its Relations to Dipsomania*," by Edward C. Mann, Brooklyn, N. Y. "*La Antropologia Criminal de Puerto Rico*," by Jose Rodriquez Castro, Puerto Rico. "Present Status of Criminal Anthropology," by G. Frank Lydston, Chicago. Ill. "Hypnotism; does it Menace Public Weal?" by Fred C. Valentine, New York City. "The Doctor in Court," by D. R. Wallace, Terrell, Texas. "The Medico-Legal Aspect of Hypnotism." "The Question of Responsibility in the Extirpation of the Uterine Appendages in the Insane and in Minors." "The Legal Aspect of Abdominal Section for Penetrating Wounds of the Abdomen." "Medical Jurisprudence; its Aims, Importance, Status and Demands for Higher Recognition and Increased Facilities for Instruction by our Institutions of Learning devoted to fitting our Young Men for the Professions of Law and Medicine," by A. Garcelon, Executive President, Lewiston, Me.

## SECTION ON DISEASES OF THE MIND AND NERVOUS SYSTEM.

Formal Address, by C. H. Hughes, Executive President of the Section, St. Louis. Mo. "The Gangliated Nervous System, and Some of its Diseases," by Chas. K. Mills, Philadelphia, Pa. Paper by William A. Hammond, Washington, D. C. "The Traumatic Psychoneurosis; its Relations to Paronoia, Epilepsy and Paretic Dementia," by J. G. Kiernan, Chicago, Ill. Paper by Theo. Diller, Pittsburgh, Pa. Paper by E. C. Seguin, New York City. "The Urine in Sexual Neurasthenia," by Chas. L. Dana, New York City. "Suppurative Meningitis and Myelitis, with Exhibition of Specimens," by Graeme M. Hammond, New York City. "The Disease of Inebriety and its Treatment," by T. D. Crothers, Hartford, Conn. "Chorea," by Charles Henry Brown, New York City. "Study of the Temperature in Twenty-five Cases of General Paralysis of the Insane," by Frederick Peterson, New York City. "The Present Status of Infantile Cerebral Palsies," by Frederick Peterson, New York City. "The Successful Management of Inebriety without Secrecy in Therapeutics," by C. H. Hughes, St. Louis, Mo. "Erotopathia: Morbid Erotism," by C. H. Hughes, St. Louis. Mo. "The Medical Treatment of Insanity," by Edward C. Mann, Brooklyn, N. Y. "Address of Welcome" (in Spanish), by Wm. A. Hammond, Washington, D. C. "Where the Newborn Baby Learned to Suck," by C. A. F. Lindorme. Atlanta, Ga. "The Treatment of Nervous Diseases in Sanitariums," by Jas. K. King, Watkins, N. Y. "The Influence of Alcohol upon the Human Powers and Constitution," by T. L. Wright. [illegible] e Treatment of Cerebral Hemorrhage," by D. I [illegible] Neuro-Angio Paralysis and its Relation to Par [illegible] C. Hoyt, Clarinda, Iowa. Paper by S. Weir Mitchell, Philadelphia. Pa. Paper by E. C. Spitzka, New York City. Paper by O. T Sherman, Boston, Mass. "Civil Service in American Hospitals for the Insane," by S. V. Clevenger, Chicago. Ill. "La Renguera," by Daniel Guiterrez y Arango, Cali, Cauca, Colombia. "Paralisis Espastica Cerebral de los Adultos," by Manuel Carmona y Valle, City of Mexico, Mexico. "On the Prognosis of 'Railway Spine,'" by F. X. Dercum, Philadelphia, Pa. "The Nervous Symptoms of Storms," by Curran Pope, Louisville, Ky. "A Peculiar Type of Vaso-Motor Neurasthenia (The Pulsating Disease), with Report of and Operation for the Same," by Chas. L. Dana, New York City. "Curability of Inebriety," by J. G. Reed, Elmwood Place, Ohio. "Nutrition Against Stimulation," by W. H. Maxon, St. Louis, Mo.

## SECTION ON DISEASES OF CHILDREN.

"The Most Successful Method of Treating Croup," by J. O'Dwyer, New York City. [illegible] in Colleges and Public Schools," by F. [illegible] io. "Clinical Aspects of Infant Feeding," [illegible] Pa. "Clinical Notes of Eruptive Fevers i [illegible] A. Edwards, San Diego, Cal. "Infant Feeding," by T. M. Rotch. Boston, Mass. "The Time and Mode of the Introduction of the Exotic Diseases of Children into America," by J. Lewis Smith, New York City. "Physical Training of Public School Children," by J. Gardiner Smith, New York City. "Palmus," by L. C. Gray, New York City. "Enteroclysis in Intestinal Diseases of Children," by E. E. Graham, Philadelphia, Pa. "Bacteriological Diagnosis of Diphtheria," by H. C. Ernst, Boston, M [illegible] by F. Peterson, New York City. "On Milk" [illegible] D. Chapin, New York City. "The Race Fa [illegible] Disease," by J. W. Byers, Charlotte, N. C. "I [illegible] in Early Life," by A. Brothers, New York City. "A Contribution to the Knowledge of Acute Primitive Entero-colitis During Low Infancy," by Joaquin L. Dueñas, Havana, Cuba. Paper by J. B. Deaver, Philadelphia, Pa. "The Production of Cow's Milk Designed for Infant Feeding," by Henry L. Coit, Newark, N. J. "The Proper Mode of Preventing and Treat- [illegible] l on Recent Discoveries Relating to its Etiology [illegible] Lewis Smith, New York City. "The Normal Præ- [illegible] d Childhood," by H. B. Whitney, Denver, Colo. [illegible] Observed in the Island of Puerto Rico," by Antonio Amadeo. Manuabo, Porto [illegible] cussion among Children," by Dr. Olinto, Porto [illegible] of Children in Cuba during Infancy," by Joaq [illegible] uba. "Pertussis as it exists in the Rocky Mountains," by John M. Keating, Colorado Springs. Colo. "Types of Gastro-intestinal Disease Prevalent in New York, by Floyd M. Crandall, New York City. "Insane Disorders of Childhood," by J. Madison Taylor, Philadelphia, Pa. "Cirrhosis of the Liver in Children," by Wm. A. Edwards, San Diego, Cal. "The Artificial Feeding of Children in Mexico," by J. Ramon Icasa, City of Mexico, Mexico.

## SECTION ON PHYSIOLOGY.

"American Physiology—Past, Present and Future," by Isaac Ott, Executive President of Section. Easton, Pa. "Pathology of Yellow Fever," by Joseph Jones, New Orleans, La. "The Effect of Lesions of Certain Parts of the Brain upon the Heat Processes," by E. T. Reichert, Philadelphia, Pa. "Heat Mechanism," by Bartolemeo Baculo, Naples, Italy. "The Globucidal Action of Blood Serum," by W. S. Carter, Philadelphia, Pa. "On the Absorption of Iron in the Animal body," by A. B. MacAl-

Big Four railway, 2:55 P. M.; leave Cincinnati, Chesapeake & Ohio railway, 6:15 P. M.; leave Clifton Forge, Eastern time, 7:23 A. M.; arrive Washington, Eastern time, 2:10 P. M.

*The Route.*—The service and equipment of the above roads are unsurpassed; all trains are vestibuled, and gas and electric lighted. Dining car service through. The Chesapeake & Ohio is one of the most picturesque routes in America, and passes through 300 miles of river, mountain and canon scenery, unequaled, and from Charlottesville to Washington it passes over a dozen or more of the most noted battlefields of the late war, and through many famous health resorts in the Blue Ridge and Allegheny mountains where stop-over will be granted returning.

Please notify the undersigned at your early convenience if you will make the trip and what sleeping car accommodations you desire.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
68 Wabash Ave., Chicago,
or "Big 4" office, 234 Clark St

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## PAN-AMERICAN MEDICAL CONGRESS.

### SECTION ON OPHTHALMOLOGY.

Preliminary Program.—The meeting of the Section will be held in the Arlington hotel. The session of September 6th, will be devoted to the discussion of the subject of the "Detection and Correction of Astigmatism," with the reading of papers upon this subject. The meeting of September 7th will in like manner be given to a consideration of the "Detection and Correction of Muscular Errors." Julian J. Chisolm, Executive President, Baltimore, Md.; George M. Gould, English-speaking Secretary, Philadelphia, Pa.; J. Harris Pierpont, Spanish-speaking Secretary, Pensacola, Fla.

*September 5th, 3 o'clock p. m.* "Some Experiences in Hemorrhagic Glaucoma: Its Progress and Treatment." By S. D. Risley, Philadelphia. "Homeochronous Hereditary Optic-nerve Atrophy Extending Through Six Generations." By George M. Gould, Philadelphia. "Suppurative Processes of the Vitreous." By J. F. Fulton, St. Paul. "A Clinical Study of the Visual Field in Hemianopia." By Charles A. Oliver, Philadelphia. "Glaucoma from Traumatic Causes." By E. Lopez, Havana. "Spontaneous Replacement of a Case of Detached Retina." By J. Wallace, Philadelphia. "Etiology and Early Management of Glaucoma." By G. E. Dean, Scranton, Pa. "Acute Monocular Neuro-retinitis, with Cases." By B. L. Millikin, Cleveland.

*September 6th.*—"Further Studies of the Cycloplegic Value of Homatropin and Cocain Discs as a Substitute for Atropin and Hyoscyamin," By Casey A. Wood, Chicago. "The Relation of Skiascopy to other Tests for the Determination of Ocular Refraction." By. H. V. Würdemann, Milwaukee. "The Necessity for Complete Suspension of Accommodation by Mydriatics in the Adjustment of Glasses." By G. C. Savage, Nashville, Tenn. "A Contribution to Refractive Errors." By J. C. Morgan, Philadelphia. "Astigmatism following Cataract Extractions and other Sections of the Cornea." By Edward Jackson, Philadelphia. "A Few Thoughts about Ophhalmometry, as to what the Javal Instrument will do and what it will not." By Louis J. Lautenbach, Philadelphia. "Skiascopy in Ophthalmometry." By Pedro Lagleyze, Buenos Ayres, Argentine Republic.

*September 7th.*—"A Clinical Study of Heterophoria." By Hiram Woods, Baltimore. "An Analysis of Fifty Cases of Internal Squint." By H. F. Hansell, Philadelphia. "Some Forms of Anomalies in Eye Muscles." By E. J. Gardner, Chicago. "Affections of the Nose as a Cause of the [illegible] n of the Eye Muscles." By W. Cheat- [illegible] riences in Graduated Tenotomy." By [illegible] "Graduated and Complete Tenotomy for the Relief of Heterophoria, with a New Objective Test for Use During Operation." By S. Lewis Ziegler, Philadelphia.

*September 8th.*—"Treatment of Six Cases of Irido-cyclitis Complicated with Cataract." By Robert L. Randolph, Baltimore. "Electric Therapeutics in Ophthalmic Practice." By L. A. W. Alleman, Brooklyn. "Gouty and Rheumatic Affections of the Eye." By W. Oliver Moore, New York. [illegible] of Bichloride of Mercury in the Deep Inflamma- [illegible] F. Mittendorf, New York. "Skin-grafting for Ma- [illegible]" By F. B. Tiffany, Kansas City. "The Nomencla- [illegible] y Dudley S. Reynolds, Louisville. "Orbital Tu- [illegible] on, Paterson, N. J. "Exophthalmus Traumaticus." By Dr. L. F. Love, Philadelphia. "Further Observations on the Eye of the Negro." By C. W. Kollock, Charleston, S. C. "Hemorrhagic or Croupous Iritis." By A. Alt, St. Louis. "A Case of Cysticercus in the Vitreous." By W. Cheatham, Louisville, Ky.

### SECTION ON PEDAGOGY.

Provisional Program.—*Tuesday, September 5th.*—The President's Address, "Medical Education in the United States." "The Importance of Physiological Chemistry as a part of Medical Education." By R. H. Chittenden, Ph. D., Professor of Physiological Chemistry, The Sheffield Scientific School, New Haven, Conn. "The Importance of Bacteriological Study to Medical Students, and the Scope of Instruction." By Harold C. Ernst, Assistant Professor of Bacteriology in the Harvard Medical School, Boston, Mass.

*Wednesday, September 6th.*—At the close of the General Session 11 A. M. —"A [illegible] ean Section and the Porro Operations." By G [illegible] hio. "A Contribution to a Study of Meth [illegible] in the United States." By Bayard Holmes, The College of Physicians and Surgeons, Chicago, Ill. "Methods of Teaching Clinical Medicine." By F. C. Shattuck, Professor of Clinical Medicine in the Harvard Medical School, Boston, Mass.

*Thursday, September 7th.*—At the close of the General Session, 11 A.M.— "A Demonstration with Colored Crayon, of Methods of Instruction in Anatomy and Surgery." By M. H. Richardson, Assistant Professor of Anatomy in Harvard University. "The Methods of Medical Education." By Victor Vaughn, Ann Arbor, Michigan. "The Aims and Methods of Medical Education." By W. C. Dabney, University of Virginia.

*Friday, September 8th.*—"The Relation of Biology to Medical Education." W. T. Sedgwick, Professor of Biology in the Massachusetts Institute of Technology, Boston, Mass. "A Demonstration of the Physiological Action of the Heart." By J. P. Sawer, Cleveland, Ohio.

NOTE:—It is intended to obtain the use of an amphitheater for demonstrations of special subjects. Any contribution to the program of the Section, either by paper or discussion, is solicted from those especially interested in the problem of Medical Education.

CHARLES L. SCUDDER, M.D. *English-speaking Secretary,*
Boston, Mass.
WM. F. HUTCHINSON, M.D., *Spanish-speaking Secretary,*
Providence, R.I.
J. COLLINS WARREN, M.D., *President.*
Boston, Mass.

### SECTION ON MARINE HYGIENE AND QUARANTINE.

Formal Address, by Walter Wyman, Executive President of the Section, Surgeon General of the United States Marine Hospital Service, Washington, D. C. "The Hygiene of Vessels, Commercial and Naval, Including the Question of Ventilation, Heating, Sanitary Arrangements, the Disposal of Cargo so as to Facilitate Disinfection, Steam Disinfection, Food Supply, etc." (Discussion Opened by John J. Cassidy, Ontario, Canada. "Epidemic and Exotic Diseases Propagated by Shipping, What Diseases Should be Quarantined, Responsibility of Nations for Epidemics; India for Cholera, South America for Yellow Fever. Can a Feasible Plan be Devised to Totally Exterminate Cholera? International Intervention to Prevent the Propagation of Cholera or other Epidemic Diseases by Pilgrimages or Immigration." (Discussion Opened by Wolfred Nelson, New York City.) "International Uniformity in Quarantine Regulations." (Discussion Opened by Juan J. Ulloa, San Jose, Costa Rica.) "The Medical Officers of Passenger Vessels; Methods for their Selection, Duties, etc." "The Vital Statistics of Seamen and Firemen. The Question of the Medical Examination of Crews Preparatory to Shipping." "The Supervision of Vessels by Government Medical Inspectors at Ports of Arrival and Departure. Code of Rules for Handling an Epidemic Disease that Breaks out on Shipboard. Disinfection of Passengers and Crew During a Voyage. Location and Arrangement of Ship's Hospitals." "Arrangement of Detail and Equipment of Quarantine Stations: *a*, Inspection Stations; *b*, Local Quarantine Stations; *c*, Refuge Stations. Methods for Handling Infected or Suspected Vessels Interstate and Inland Quarantine. Sanitary Cordons; Camps of Refuge; Camps of Probation. Recent Improvements in Hospitals for Infectious Diseases, Railroad Inspection and Quarantine. Length of Time Vessels Should be Held in Quarantine. Conditions that Should Determine Proclamation of Quarantine Against a Country." "Under what Requirements may Passenger Traffic be Carried on Between a Port Infected with Yellow Fever and a Southern Port of the United States During the Summer with the Least Obstruction to Such Traffic." "What Merchandise Should be Considered as Requiring Treatment if Shipped from a Port or Place Infected with Cholera, Yellow Fever or Smallpox?" "Methods of Disinfection: *a*, Persons; *b*, Baggage; *c*, Cargoes; *d*, Vessels. Recent Improvements in Quarantine Appliances; Steam Chambers; Sulphur Furnaces. Liquid Sulphur Dioxide as a Disinfectant. Treatment of Ballast Water; Solid. What Time Should an Infected Vessel be Detained in Quarantine? *a*, For the Cholera; *b*, For Smallpox; *c*, For Typhus Fever; *d*, For Plague; *e*, For Yellow Fever. Methods of Disposal of the Bodies of those that Die While in Quarantine."

### SECTION ON RAILWAY SURGERY.

Formal Address, by C. W. P. Brock, Executive President of the Section, Richmond, Va. "Railway Surgery, as a Branch of the Surgical Art," by E. R. Lewis, Kansas City, Mo. "The Nose and Throat Service of the Missouri Pacific Hospital for 1892," by Hanau W. Loeb, St. Louis, Mo. "The History of Railway Sur [illegible] C. B. Stemen, Ft. Wayne, Ind. "Hot Water in [illegible] of the Foot and Ankle," by Geo. Chaffee, Bro [illegible] of Shaft of Femur following Pathological Fracture," by Alex. J. Mullen, Michigan City, Ind. "Implantation of Senn's Decalcified Bone. Recovery," by B. F. Wilson, Slater, Mo. "The Essential Elements of Ideal Surgery," by B. F. Wilson, Slater, Mo. Paper by T. C. Kennedy, Shelbyville, Ind. Paper by J. N. Warren, Sioux City, Ia. "The Torsion of Arteries for the Arrest of Hemorrhage," by J. B. Murdoch, Pittsburgh, Pa.

### SECTION ON DERMATOLOGY AND SYPHILOGRAPHY.

"American Dermatology," by A. H. Ohmann-Dumesnil, Executive President of the Section, St. Louis, Mo. "Lupus, its Excision with Reports of Cases," by B. Merrill Ricketts, Cincinnati, O. "Glycosuria as [illegible] igin of Dermatitis Herpetifo [illegible] Y. "A Statistical Record of [illegible]" by Wm. M. Welch, Philade [illegible] the Nails," by J. V. Shoemaker, Philadelphia, Pa. "Primary Dystrophies of the Skin," by E. Preble, Cleveland, Ohio. Paper by Geo. Holsten, Brooklyn, N. Y. "Rhinophyma," by Wm. Gottheil, New York City. "Rhinophyma," by A. H. Ohmann-Dumesnil, St. Louis, Mo. "Framboesia" "Yaws," by George Edmund Pierez, British West Indies. "The Question of the Communicability of Leprosy," by Beaven Rake, Trinidad, West Indies. "Some of the Rarer Trophic Lesions in Leprosy," by Beaven Rake, Trinidad, West Indies. "Beriberi en el Cauca," by Evaristo Garcia, Cali, Cauca, Colombia. "Lepra en el Cauca," by Evaristo Garcia and Adolfo Tenoris, Cali, Cauca, Colombia. "El Caratea," by Juan N. Wallis O., and Alfredo Garces y Domingo, Arboleda, Colombia. "A Case of Recurrent Pruritus," by A. H. Ohmann Dumesnil, St. Louis, Mo. "On the Etiology of Eczema," by A. Ravogli, Cincinnati, O.

### SECTION ON GENERAL AND ORTHOPEDIC SURGERY.

Address by the Executive President.

"The Treatment of Potts' Disease of the Spine," by A. B. Judson, New York, N. Y. "The Probable Cause of Limp in the First and Second Stages of Hip Joint Disease," by Harry M. Sherman, San Francisco, Cal. "Mechanical Treatment of Osteo-Arthritis of the Knee," by Henry Ling Taylor, New York, N. Y. Paper by Dr. Bernando Herrera, Caracas, Venezuela. Paper by Dr. J [illegible] Venezuela. "Ununited Fracture," by Llewelly [illegible]. "Some Points in the Surgical Treatment of [illegible] s P. Clarke, Cambridge, Mass. "A [illegible] or Surgeons," by Edw. A. Tracy, Boston, Mass. [illegible]," by Thomas G. Maghee, Rawlins, Wyo. "Ure [illegible] le," by R Menocal, Havana, Cuba. "Simplicity in Surgery," by Robt. W. Johnson, Baltimore, Md. "A Report of Four Cases of Brain Surgery," by Andrew J. McCosh, New York N. Y. "Soudas y Bujras Gercas del Dr. Castano," by Dr. Alberto Castano, Buenos [illegible] Paper by Ignacio Placencia, Havana, Cuba. [illegible] Havana, Cuba. "Tratamients quirurgico [illegible] undo B. Mateo, Havana, Cuba. "In what Class of Cases is Drainage Required?" by H. O. Marcy, Boston, Mass. "Causation, Pathology and Treatment of Carbuncle," by David W. Graham, Chicago, Ill. Paper by Dr. Martin Herrera, Caracas, Venezuela. Paper by Dr. Miguel A. Leco, Caracas, Venezuela. "Improved

Long Traction Hip Splint, with Proper Method of Applying Counter-extension," by Henry Long Taylor, New York City. "Improved Appa- [illegible] Henry Long Taylor, New York City. "Ap [illegible] Talipes-Equino-Varus and for the Retention [illegible] Henry Long Taylor, New York City. "Prac- [illegible] Noble Smith, London, England. "Observations on the Rotary Lateral Curvature of the Spine, with Special Reference to Etiology and Treatment," by Jacob Teschner, New York City. "Recumbence in the Treatment of Potts' Disease," by John C. Scnapps, Brooklyn, N. Y. "Causes Contributing to Failure in the Treatment of Hip Joint Disease," by A. M. Phelps, New York City. "Some Thomas' Splints with Demonstrations of Principles," by John Ridlon, Chicago, Ill. "Orthopedic Work done at the Vanderbilt Clinic of New York, from January, 1889, to June, 1893," by John Ridlon, Chicago, Ill. "A Case of Acute Arthritis of the Hip of Infants, with some Remarks on the Etiology of the Affection," by Augustus Thornedike, Boston, Mass. "The Orthopedic Treatment of Infantile Paralysis," by L. A. Weigel, Rochester, N. Y. "Gymnastic Apparatus for Scoliosis," by L. A. Weigel, Rochester, N. Y. "Practical Points in the Treatment of Hip Disease," by A. B. Judson, New York City. "The Technique of the Plaster Jacket," by Reginald H. Sayre, New York City. "Club Ha [illegible] re, New York City. "Gastrostomy for Relief of [illegible] by Ernest Laplace, Philadelphia, Pa. "Epithel: [illegible] its Pathology and Treatment," by Lewis Cooper Lane, San Francisco, Cal. "A Contribution to Rectal Surgery and Bloodless Operations on Membranous and Lax Tissues by Means of an Elastic Quilled or Welted Suture," by H. M. Bishop, Los Angeles, Cal. "Hypertrophy of the Prostate," by G. Frank Lydston, Chicago. "The Bacteriological Aspect of Aseptic Surgery," by Robert Reyburn, Washington, D. C. "Laparotomy in the Early Stages of Appendicitis," by I. N. Quimby, Jersey City, N. J. "The Indications Governing the Use of the Various Anæsthetics," by John A. Wyeth.

### SECTION ON HYGIENE, CLIMATOLOGY AND DEMOGRAPHY.

PRELIMINARY NOTICE.—The Headquarters of this Section will be at the Hotel Richmond, corner of 17th and H streets, N. W., the proprietor of which, Major F. W. Coleman, has kindly offered reduced rates for members of the Section. The opening address by the president of the Section will be delivered on Tuesday, Sept. 5, at 3:30 P. M., at the meeting place which shall be assigned by the committee on halls. Regular sessions of the Section for the reading and discussion of papers will be held on Wednesday and Thursday, Sept. 6 and 7, from 11:30 A.M. to 1 P.M. and from 3 to 5 P.M., and a final session on Friday, Sept. 8, from 10:30 A.M. to 1 P.M. Through the courtesy of the Surgeon General of the Navy and the Director in charge of the U. S. Naval Museum of Hygiene, that building will be open for inspection by members of the Congress from 10 A.M. to 4 P.M., daily, on Wednesday, Thursday and Friday, Sept. 6th, 7th and 8th.

ALBERT L. GIHON, M.D., U. S. N., Exec. Prest., Washington, D. C.
PETER H. BRYCE, M.D., English-speaking Sec'y, Toronto, Can.
PEDRO JOSE SALICRUP, Spanish-speaking Sec'y, New York City.

"The Climate of Jamaica," by J. C. Phillippo, Kingston, Jamaica. "Les Mesures Prophylactiques Contre les Epidemies," by J. B. Da Lacerda, Rio de Janeira, Brazil. "Practical Measures in the Prevention of Tuberculosis," by Lawrence F. Flick, Philadelphia Pa. "Apuntes Sobre la Patologia del Departmento Fluvial de Loreto," by Leonidas Arendaño, Lima, Peru. "Ojeada Retrospectiva Sobre la Organizacion de la Sanidad en los Ejercitos Españoles," by Felix Estrada y Catoyra, Havana, Cuba. "The Climate of Western North Carolina, with a Consideration of the Relative Value of High and Medium Altitudes in the Treatment of Pulmonary Tuberculosis," by Karl von Ruck, Asheville, N. C. "The Climate of the Santa Cruz Mountains," by James Henry Clark, Jamaica, W. I. "On the Early Detection of Seasonable Climatic and other Treatment of Phthisis," by Charles Denison, Denver, Colo. 'The Distribution of Disease by Isthmian Practice, or the Direct Responsibility of the Republic of Columbia, S. A., in the Burial and Disinterring of the Dead on the Isthmus of Panama," by Wolfred Nelson, New York City. "The Three Climates of Jamaica, B. W. I., its Coast or Tropical, Temperate and Mountain Climates; Jamaica considered as a Winter Island for Health," by Wolfred Nelson, New York City. "A Brief Consideration of [illegible] m, as Observed in the Samoan Islands," by John [illegible] D. C. "On the Climatology of Egypt," by Dr. Gran [illegible] "Hygiene and Demography of Jamaica," by Ja [illegible] Kingston, Jamaica. "The Need of Research in Preventive Medicine," by J. M. Postle, Hinckley, Ill. "The Effect of Advanced Civilization on Disease," by W. J. Moody, Plainfield, Iowa. "Necessary Laws that Should be Enacted by the Several States by which Municipal Health Authorities may be Enabled to Control Infectious Diseases;" "The Cause and Prevention of Diphtheria;" "The Limitation and Prophylaxis of Tuberculosis;" "The Role of Municipal Sanitation in the Limitation and Eradication of Yellow Fever;" "On the Climatology of Mesopotamia," by John Sundberg, U. S. Consul, Bagdad, Asiatic Turkey. "On the Climatology of Puerto Rico," by Pedro José Salicrup, Secretary of the Section, New York City. Formal Address, by Albert L. Gihon, Medical Director U. S. Navy, Naval Hospital, Washington, D. C.

### SECTION ON OBSTETRICS.

Address by Giles S. Mitchell, Executive President, Cincinnati, O. "Maternity Hospitals and their Results," by Joseph Price, Philadelphia, Pa. "The Axis Traction Principle in Obstetrics," by Joseph Hoffman, Philadelphia, Pa. "The Care of the Pregnant Woman in the First Half of Utero-Gestation," by W. H. Baker, Boston, Mass. "The Hemorrhages of Pregnancy and their Management," by J. O. Polak, Brooklyn, N. Y. "A Study of Placenta Prævia, Especially the Causes of the Hemorrhages," by Sarah Hackett Stevenson, Chicago, Ill. "The Management of the Placenta in Operations for Ectopic Gestation," by D. Tod Gilliam, Columbus, O. "The State of Obstetrics in General Practice," by Eliza H. Root, Chicago, Ill. "The Mechanism of Labor," by J. C. Rutherford, Providence, R. I. "The Induction of Premature Labor," by J. H. W. Chestnut, Philadelphia, Pa. "Aids to Easy Parturition," by A. J. C. Saunier, Chicago, Ill. "Occipito-posterior Positions and their Management," by F. C. Furgeson, Indianapolis, Ind. "The Therapeutic Application of Chloroform in Labor," by J. N. Upshur, Richmond, Va. "The Management of Some Cases of Difficult Labor," by Wm. H. Taylor, Cincinnati, O. "Forceps Delivery," by James Campbell, Hartford, Conn. "The More Frequent Use of Forceps in the Multipara," by Lyman A. Berger, Kansas City, Mo. "The Use and Abuse of the Forceps," by W. Frank Haehnlen, Philadelphia, Pa "Symphyseotomy," by Henri Jacques Garrigues, New York City. "What has Surgery done for Modern Obstetrics," by Thomas Opie, Baltimore, Md. "Recent Surgical Advances and their Relation to Conservative Obstetrics," by W. Reynolds Wilson, Philadelphia, Pa. "Puerperal Peri-uterine Inflammations; their Pathology and Treatment," by J. Foster Scott, Washington, D. C. "The Pathology and Treatment of Puerperal Infection," by Edward A. Ayers, New York City. "Infection of the Kidneys after Labor," by Barton Cooke Hirst, Philadelphia, Pa. "Puerperal Eclampsia," by J. G. Cecil, Louisville, Ky. "Puerperal Eclampsia," by Theophilus Parvin, Philadelphia, Pa. "Induction of Labor and Accouchment Force in the Preventive Treatment of Eclampsia," by Charles Jewett, Brooklyn, N. Y. "Contribucion al estudio de la Septicemia puerperal," by Antonia Jose Amadeo, Maunabo, Puerto Rico. "A Study of Dystocia," by Salvador Garciadiego, Gaudalajara, Mexico. "A Method of Performing Rapid Manual Dilation of the Os Uteri and its advantages in the Treatment of Placenta Prævia," by F [illegible] "Nota Sobre la Expresion de la [illegible] st Partum," by Sebastian Cuervo [illegible] Application of Graphics to the Fc [illegible] n, Harrisburgh, Pa. "Compression Uterina," by Jose Maria de Ita, Pueblo, Mexico.

### SECTION ON MEDICAL JURISPRUDENCE.

"Medical Jurisprudence in its Relations to Dipsomania," by Edward C. Mann, Brooklyn, N. Y. "La Antropologia Criminal de Puerto Rico," by Jose Rodriquez Castro, Puerto Rico. "Present Status of Criminal Anthropology," by G. Frank Lydston, Chicago, Ill. "Hypnotism; does it Menace Public Weal?" by Fred C. Valentine, New York City. "The Doctor in Court," by D. R. Wallace, Terrell, Texas. "The Medico-Legal Aspect of Hypnotism." "The Question of Responsibility in the Extirpation of the Uterine Appendages in the Insane and in Minors." "The Legal Aspect of Abdominal Section for Penetrating Wounds of the Abdomen." "Medical Jurisprudence; its Aims, Importance, Status and Demands for Higher Recognition and Increased Facilities for Instruction by our Institutions of Learning devoted to fitting our Young Men for the Professions of Law and Medicine," by A. Garcelon, Executive President, Lewiston, Me.

### SECTION ON DISEASES OF THE MIND AND NERVOUS SYSTEM.

Formal Address, by C. H. Hughes, Executive President of the Section, St. Louis, Mo. "The Gangliated Nervous System, and Some of its Diseases," by Chas. K. Mills, Philadelphia, Pa. Paper by William A. Hammond, [illegible] sychoneurosis; its Relations to [illegible] ," by J. G. Kiernan, Chicago, Ill. [illegible] per by E. C. Seguin, New York Ci [illegible] " by Chas. L. Dana, New York City. "Suppurative Meningitis and Myelitis, with Exhibition of Specimens," by Graeme M. Hammond, New York City. "The Disease of Inebriety and its Treatment," by T. D. Crothers, Hartford, Conn. "Chorea," by Charles Henry Brown, New York City. "Study of the Temperature in Twenty-five Cases of General Paralysis of the Insane," by Frederick Peterson, New York City. "The Present Status of Infantile Cerebral Palsies," by Frederick Peterson, New York City. "The Successful Management of Inebriety without Secrecy in Therapeutics," by C. H. Hughes, St. Louis, Mo. "Erotopathia: Morbid Erotism," by C. H. Hughes, St. Louis, Mo. "The Medical Treatment of Insanity," by Edward C. Mann, Brookl [illegible] come" (in Spanish), by Wm. A. Hammond, W [illegible] the Newborn Baby Learned to Suck," by C. A [illegible] "The Treatment of Nervous Diseases in San [illegible], Watkins, N. Y. "The Influence of Alcohol upon the Human Powers and Constitution," by T. L. Wright, Bellefontaine, Ohio. "The Treatment of Cerebral Hemorrhage," by D. R. Brower, Chicago, Ill. "Neuro-Angio Paralysis and its Relation to Paretic Dementia," by Frank C. Hoyt, Clarinda, Iowa. Paper by S. Weir Mitchell, Philadelphia, Pa. Paper by E. C. Spitzka, New York City. Paper by O. T Sherman, Boston, Mass. "Civil Service in American Hospitals for the Insane," by S. V. Clevenger, Chicago, Ill. "La Renguera," by Daniel Guiterrez y Arango, Cali, Cauca, Colombia. "Paralisis Espastica Cerebral de los Adultos," by Manuel Carmona y Valle, City of Mexico, Mexico. "On the Prognosis of 'Railway Spine,'" by F. X. Dercum, Philadelphia, Pa. "The Nervous Symptoms of Storms," by Curran Pope, Louisville, Ky. "A Peculiar Type of Vaso-Motor Neurasthenia (The Pulsating Disease), with Report of and Operation for the Same," by Chas. L. Dana, New York City. "Curability of Inebriety," by J. G. Reed, Elmwood Place, Ohio. "Nutrition Against Stimulation," by W. H. Maxon, St. Louis, Mo.

### SECTION ON DISEASES OF CHILDREN.

"The Most Successful Method of Treating Croup," by J. O'Dwyer, New York City. "The Teaching of Hygiene in Colleges and Public Schools," by F. Forchheimer, Cincinnati, Ohio. "Clinical Aspects of Infant Feeding," by E. P. Davis, Philadelphia, Pa. "Clinical Notes of Eruptive Fevers in Southern California," by W. A. Edwards, San Diego, Cal. "Infant Feeding," by T. M. Rotch, Boston, Mass. "The Time and Mode of the Introduction of the Exotic Diseases of Children into America," by J. Lewis Smith, New York City. "Physical Training of Public School Children," by J. Gardiner Smith, New York City. "Palmus," by L. C. Gray, New York City. "Enteroclysis in Intestinal Diseases of Children," by E. E. Graham, Philadelphia, P [illegible] osis of Diphtheria," by H. C. Ernst, Boston, M [illegible] ." by F. Peterson, New York City. "On Milk" [illegible] y D. Chapin, New York City. "The Race Fa [illegible] Disease," by J. W. Byers, Charlotte, N. C. "The Treatment of Empyema in Early Life," by A. Brothers, New York City. "A Contribution to the Knowledge of Acute Primitive Entero-colitis During Low Infancy," by Joaquin L. Dueñas, Havana, Cuba. Paper by J. B. Deaver, Philadelphia, Pa. "The Production of Cow's Milk Designed for Infant Feeding," by Henry L. Coit, Newark, N. J. "The Proper Mode of Preventing and Treating Diphtheria, based on Recent Discoveries Relating to its Etiology and Pathology," by J. Lewis Smith, New York City. "The Normal Præcordia in Infancy and Childhood," by H. B. Whitney, Denver, Colo. "Intestinal Parasites Observed in the Island of Puerto Rico," by Antonio Amadeo, Manuabo, Porto [illegible] on among Children," by Dr. Olinto, Porto [illegible] hildren in Cuba during Infancy," by Joaq [illegible] "Pertussis as it exists in the Rocky Mo [illegible] Colorado Springs, Colo. "Types of Gastro-intestinal Disease Prevalent in New York, by Floyd M. Crandall, New York City. "Insane Disorders of Childhood," by J. Madison Taylor, Philadelphia, Pa. "Cirrhosis of the Liver in Children," by Wm. A. Edwards, San Diego, Cal. "The Artificial Feeding of Children in Mexico," by J. Ramon Icasa, City of Mexico, Mexico.

### SECTION ON PHYSIOLOGY.

"American Physiology—Past, Present and Future," by Isaac Ott, Executive President of Section, Easton, Pa. "Pathology of Yellow Fever," by Joseph Jones, New Orleans, La. "The Effect of Lesions of Certain Parts of the Brain upon the Heat Processes," by E. T. Reichert, Philadelphia, Pa. "Heat Mechanism," by Bartolemeo Baculo, Naples, Italy. "The Globucidal Action of Blood Serum," by W. S. Carter, Philadelphia, Pa. "On the Absorption of Iron in the Animal body," by A. B. MacAllum, Toronto, Canada. "Sur les Troubles Fonctionnelles Dues a la Chaleur," by J. B. DaLacerda, Rio de Janeiro, Brazil. "Automatism of Nerve Centers," by Prof. Samuel Wolfe, Philadelphia, Pa. "On the Proteolysis of Crystalized Phyto-globulin or Vitellin," by Prof. R. H. Chittenden, New Haven, Conn. "Innervation of the Venæ Portæ," by F. Mall, Chicago, Ill. "The Physiological Bases of Therapeutic Action—An Experimental Inquiry," by Thomas J. Mays, Philadelphia, Pa. "Some Observations on the Normal Growth and Muscular Development of the Human Body under Systematized Exercises," by Henry G. Beyer, Annapolis, Md. "'Conversazione' on Methods of Teaching and Demonstrating Physiological Subjects," by W. G. Thompson, New York City. "Hibernation and Allied States in Animals," by Wesley Mills, Montreal, Canada. "Sobre el Numero des los Globulos Rejos," by Dr. Jose G. Hernandez, Caracas, Venezuela. "La Force Musculaire Cher Les Indiens," by Dr. J. B. DeLacerda, Rio de Janeiro, Brazil. "On the Respiratory Center in the Medulla Oblongato," by Prof. Dr. J. Gad, Berlin, Germany. "The Analysis of the Gastric Juice for Some Diseases of the Stomach," by Hugh Hamilton, [illegible] roscopical Study of the Living Nerve Cell [illegible] C. F. Hodge, Hickory Ridge, Tenn. "Chan [illegible] n Birth to Death from Old Age," by C. F. Hodg[illegible] Paper to follow Dr. E. T. Richert's on "The Ef [illegible] Parts of the Brain upon the Heat Processes," by Isaac Ott, Easton, Pa.

## SECTION ON OTOLOGY.

"Prevention of Deaf Mutism," by C. M. Hobby, Executive President of the Section, Iowa City, Ia. "Otacoustic Treatment; its History and Results upon the Deaf and Deaf Mutes," by J. A. Maloney, Washington, D. C. "The [illegible] tment of Deafness," by Johnson Elliot, Washingt[illegible] Mastoid Cell in Acute Inflammatory Middle Ear Disease," by [illegible] se, Evansville, Ind. "Adenoids; A Contributive Factor in Aural Affections," by M. D. Lederman, New York City, N. Y. "Compressed Air, Vapors and Sprays in the Treatment of the Middle Ear, and Eustachian Tubes," by H. V. Würdeman, Milwaukee, Wis. "The Present Condition of Otology in Europe," by Lawrence Turnbull, Philadelphia, Pa "Pathological Conditions following Piercing of the Lobules of the Ear," by Max Thorner, Secretary of the Section, Cincinnati, O. "Craniometric Measurement of 500 Skulls in Relation to Aural Topographic Anatomy," by B. Alex. Randall, Philadelphia, Pa. "Description of Focussing Ear Trumpet," by Edmund D. Spear, Boston, Mass. "The Modern, Non-Surgical Treatment of Chronic Purulent Inflammation of the Middle Ear, with Indications for Surgical Interference," by R. C. Heflebower, Cincinnati, O. "The Treatment of Suppurative Processes of the Attic," by J. F. Fulton, St. Paul, Minn. "Preventable Deafness," by Chas. S. Turnbull, Philadelphia, Pa. "Contribution to the Study of Aural Syphilis," by Max Toeplitz, New York City. "On Localization of Sound," by C. Barck, St. Louis, Mo. "Indications for the Mastoid Operations and the Preferable Methods," by S. S. Bishop, Chicago, Ill. "Description of a Middle Ear Powder Blower, by R. D. Barret, St. Louis, Mo. "Chronic Disease of the Middle Ear; its Prognosis and Surgical Treatment," by Albert H. Tuttle, Cambridge, Mass. "Some Interesting Cases of Mastoid Disease," by S. MacCuen Smith, Philadelphia, Pa. "The Non-Surgical Treatment of Attic-Necrosis," by W. Cheatham, Louisville, Ky.

## SECTION ON LARYNGOLOGY AND RHINOLOGY.

Paper by Robert Levy, Denver, Colo. "The Relation of Diseases of Rectum to Nasal Catarrh," by W. John Harris, St. Louis, Mo. "Electrolysis for the Relief of Certain Morbid Conditions of the Nasal Septum," by James E. Newcomb, New York City. "Myxosis of the Pharynx," by W. C. Glasgow, St. Louis, Mo. "The Easiest and Most Practical Means of Making Galvano-cauteries—Especially to Turbinate Hypertrophies," by Arthur G. Hobbs, Atlanta, Ga. Paper by W. H. Daly, Pittsburg, Pa. Paper by A. C. Wolfe, Columbus, Ohio. "The Use of Formate Soda in Laryngeal Disease," by E. L. Shurly, Detroit, Mich. Paper by G. B Lawrason, New Orleans, La. "The Utility of the Electro cautery Snare," by H. W. Loeb, St. Louis, Mo. Paper by Jonathan [illegible] Paper by John N. McKensie, Baltimore, Md. [illegible] Intra-nasal Disease," by John O. Roe, Rochester, [illegible] H. Knight, New York City. Paper by Alexander MacCoy, Philadelphia, Pa. Paper by J. C. Mulhall, St. Louis, Mo. "A Case of Angioma of the Nasal Septum," by Frederick C. Cobb, Boston, Mass. "A Case of Elongation of the Epiglottis reduced by Operative Measures," by Price Brown, Toronto, Canada. Paper by Edward O. Clyer, Buenos Ayres, Argentine Republic. "Some of the Throat Conditions Observed in Gouty Subjects," by S. Solis-Cohen, Philadelphia, Pa. Paper by C. E. Bean, St. Paul, Minn. Paper by H. Holbrook Curtis, New York City. "The Ultimate Prognosis in Neglected Adenoid Hypertrophy," by D. Bryson Delevan, New York City. "Report of a Case of Myxo-Sarcoma of the Nasal Cavity," by C. W. Richardson, Washington, D. C. "*Surgical Treatment* of Empyema of the Maxillary Sinus," by Edward Obejero, Buenos Ayres, Argentine Republic. "Report on Cases of Tubercular Laryngitis Treated in Colorado Springs," by S. E. Solly, Colorado Springs, Colo. "Sarcoma of Naso-Pharynx, with Report of Case," by James E. Logan, Kansas City, Mo. "Alumnol in Diseases of the Throat and Nose," by J. Mount Bleyer, New York City. 'Some Forms of Nasal Reflexes with Report of Cases," by S. K. Merrick, Baltimore, Md. "Hysterical Aphonia and Deafness," by E. Fletcher Ingals, Chicago, Ill. "Clinical Notes of Cases of Tubercular Ulceration of the Larynx Treated by the Krauss Method at the Throat and Chest Clinic of the Emergency Hospital." by T. Morris Murray, Washington, D. C. "Indications and Opportunity for Opening the Mastoid Process," by Edward Obejero, Buenos Ayres, Argentine Republic. "On the Treatment of Empyema, with Due Regard to Normal Pulmonary Contractibility," by Dan Millikin, Hamilton, Ohio.

## SECTION ON ANATOMY.

"Anomolies of the Larynx as seen by the Specialist," by Wm. T. [illegible] Paper by T. Griswold Comstock, St. Louis, Mo. [illegible] Louisville, Ky. "The Diaphragm," by H. E. [illegible] "A Note on the Occurrence of the Scapulo [illegible] Robt. S. Moody, New Haven, Conn. "Mallet Finger," by Robt. T. Morris, New York City. "Laws of the Growth of the Cell applied to Human Anatomy," by Robert Reyburn, Washington, D. C. Paper by R. Winslow, Baltimore, Md. "On the Presence of Linguatula Rhinosia in the United States," by C. W. Stiles, Washington, D. C. "Nerve Anastomosis," by A. C. Bernays, St. Louis, Mo. Paper by Geo. [illegible] a. Paper by E. B. Kenner, St. Louis, Mo. [illegible] neapolis, Minn. Paper by Chas. S. Minot, [illegible] n C. Munro, Boston, Mass. Paper by J. T. [illegible] Paper by Geo. A. Piersol, Philadelphia, Pa. [illegible] St. Louis, Mo. "A Part of the Anatomy of the Velum Pendulum Palati," by Thos. F. Rumbold, San Francisco, Cal. Paper by D. F. Rodgers, Topeka, Kan. Paper by W. R. Stokes, Baltimore, Md. Paper by Prof. A. H. Tuttle, University of Virginia, Va. "The Human Hand," by Geo. W. West, Washington, D. C. Paper by Geo. W. Wilcox, Augusta, Ga. Paper by W. P. Wilson, Philadelphia, Pa. Paper by Edwin Bentley, Little Rock, Ark. Paper by Henry C. Boeming, Philadelphia, Pa. Paper by Elizabeth R. Bundy, Philadelphia, Pa. Paper by E. F. Clapp, Iowa City, Iowa. Paper by J. W. Hartigan, Morgantown, W. Va. Paper by Wm. Kraus, Memphis, Tenn. Paper by Rudolph Matas, New Orleans, La. Paper by J. W. Perkins, Kansas City, Mo. "Surgical Anatomy of the Appendix Vermiformis with some Anatomical Abnormalities Observed,' by R. H. Plummer, San Francisco, Cal. Paper by E. S. Herns, Lebanon, O. "The Dissecting Room," by E. W. Holmes, Philadelphia, Pa "The Relations of the Heart and Lungs to the Anterior Chest wall, as determined by Composite Photograph," by Irving I. Haynes, New York City. "Bone an Organized Substance," by Geo. F. Koehler, Portland, Oregon. "Craniometric Measurement of 500 Skulls in Relation to Aural Topographic Anatomy," by B. Alexander Randall, Philadelphia, Pa. "A Case of Supernumerary Nipples, with Remarks upon and Literature of the Subject," by Albert Pick, Manchester, N. H. "On the Zona Radiata of the Felostean Ovum," by Jacob Reichard, Ann Arbor, Mich.

## SECTION ON THERAPEUTICS.

Paper by Edward Randall, Galveston, Tex. "The Treatment of Scarlet Fever by Chloral Hydrate," by James C. Wilson, Philadelphia, Pa. "A Plea for Physiological Remedies," by Simon Baruch, New York City. "Treatment of Chronic Catarrh and Allied Conditions of Lowered Hydrochloric Acidity," by D. D. Stewart, Philadelphia, Pa. "The Physiological Actions of Alcohol," by David Cerna, Galveston, Tex. "The Treatment of Neurasthenia with Special Reference to the Best Cure," by F. X. Dercum, Philadelphia, Pa. "The Advantages of Amorphous Phosphorous over the Officinal Form," by E. I. Richardson, Philadelphia, Pa. "Venesection in Treatment of Engorgement and Dilation of Right Side of the Heart," by I. E. Atkinson, Baltimore, Md "The Use of *Nitro-Glycerin in Arterio-Sclerosis*," by T. G. Ashton, *Philadelphia, Pa.* Paper by Edw. Martin, Philadelphia, Pa. Formal Address by Hobart A. Hare, Executive President, Philadelphia, Pa. "The Philosophy of Therapeutics," by L. B. Anderson, Norfolk, Va. "The Antipyretic Action of Alcohol," by A. B. Simmons and R. J. Winn, Savannah, Ga. "Some Views Regarding the Philosophy of Drug Action," by J. W. McLaughlin, Austin, Tex. "The Treatment of Leprosy," by Richard H. L. Bibb, Satillo, Mexico. Paper by Fernando Altamirano, City of Mexico, Mexico. "The Clinical Import of Koumyss," by J. Mount Bleyer, New York Ctiy. "The Treatment of Exophthalmic Goitre based on Forty-five Consecutive Cases," by A. D. Rockwell, New York City. "Etude sur un Moyen d'assurer l'efficacite du copaiba daus la medication suppressive de la blererrhagie urethrale," by L. T. C. Lamothe, Port au Prince, Haiti. "Action physiologique de quelques plantes bresiliennes de la famille des Menespermacies," by J. B. Da Lacerda, Rio de Janeiro, Brazil. "Une plante Convulscvante du Bresil," by J. B. Da Lacerda, Rio de Janeiro, Brazil. "Pathology and Treatment of Gout," by James Tyson, Philadelphia, Pa. "Contribution to the Therapeutics of Yellow Fever," by Pedro Peñuelas, Havana, Cuba. "Some Points in the Treatment of Uric Acid Diathesis," by F. E. Stewart, Watkins, N. Y. "A Contribution to the Treatment of Diabetes Mellitus," by Solomon Solis-Cohen, Philadelphia, Pa. "The Value of the Bath in some Sthenic Conditions, Particularly Typhoid Fever," by Simon Baruch, New York City. "The Indications which should Govern the Employment of the Several Anæsthetics," by H. C. Wood, Philadelphia, Pa. "Electricity, its Use in Medicine," by F. Schavoir, Stamford, Conn.

## SECTION ON MILITARY MEDICINE AND SURGERY.

Address of the Executive President, GEORGE M. STERNBERG, Surgeon-General *U. S. Army.*

"Laparotomy in Gunshot Wounds," by P. S. Conner, Cincinnati, Ohio. Paper by Hunter McGuire, Richmond, Va. Paper by Col. Joseph R Smith, Med. Director, Headquarters Department of Cal., San Francisco, Cal. Paper by Wm. A. Ham [illegible] re Projectiles from Portable Hand Weapo [illegible] iring? Can a Septic Bullet infect a Gun-[illegible] A. La Garde, Chicago, Ill. "The Place of [illegible] utation, with Reference to the most useful Artificial Appliances," by Stephen Smith, New York City, N. Y. Paper by Brev't Lt. Col. A. A. Woodhull, Surg. U. S. A., Hot Springs, Ark. "Personal Experience in the results of Good and Bad Sanitation in the Confederate Army," by Bedford Brown, Alexandria, Va. "The Causes and Origin of Continued Fevers in Naval Service," by C. A. Siegfried, Surg. U. S. Navy, Newport, R. I. Paper by N. Senn, Chicago, Ill. Paper by John Homans, Boston, Mass. "Aprestos de Campamento de uso en Cuba por los Medico Militares," by Felix Estrada Catoyra, Havana. Hospital Corps Drill by Detachment, under the command of Major Van R. Hoff, Surgeon, U. S. A. "Exhibition of a Field Hospital Complete with Equipment now in use in the U. S. Army. "First Aid to the Wounded and transportation of the Wounded from the Battlefield and Field Hospitals." Visit to the Army Medical Museum. (*a*) Inspection of Collection. (*b*) Inspection of Library of the Surgeon General's Office.

**Demonstration of U. S. Hospital Corps Drill.**—The following is the order of the exercises that will be carried out under the command of Major John Van R. Hoff, Surgeon U. S. Army, at 3 P.M., Wednesday, September 6, in the Section of Military Medicine and Surgery of the Pan-American Medical Congress:

1. Inspection of hospital corps detachment.

2. Inspection of [illegible] of administration, e[illegible] sion of the Congress, [illegible] it.]

3. Bearer drill, with hand litter. Bearer drill, with extemporized litter; blanket, coat, rifle. Lifting, lowering and carrying patients by four, three, two, and single bearers; passing obstacles; with ambulance.

4. First aid drill; the application of temporary dressings; utilizing materials for splints, etc., ordinarily at hand on the battle field.

SUBJECTS.

A. Fracture of right clavicle.
B. Dislocation of left shoulder.
C. Fracture (compound) of right arm, middle third.
D. Fracture of left forearm, near elbow.
E. Hemorrhage fro[illegible] third of thigh).
F. Flesh wound of [illegible] bone.
G. Perforating gun[illegible]
H. Gaping knife wound, right abdomen.
I. *Fracture (compound) of left femur*, lower third.
J. Fracture of right tibia, middle third.
K. Sunstroke.
L. Resuscitation of apparently drowned.

5. [illegible] return of litters.
6. [illegible]
7. [illegible] detachment.

### SECTION ON GENERAL MEDICINE.

Paper by Manuel Carmona y Valle, City of Mexico, Mexico. Formas del [illegible] reconvertes, by Francisco A. Risguez, Cara [illegible] E. L. Shurly, Detroit, Michigan. Paper by J. [illegible] Pa. Paper by Charles G. Stockton, Buffalo, N. Y. Paper by F. Peyre Porcher, Charleston, S. C. Paper by J. H. Musser, Philadelphia, Pa. Paper by George Dock, Ann Arbor, Mich. " [illegible] W. [illegible] Vance, Bristol, Tenn. " [illegible] Texas. "Facts in Steth-o [illegible] r, Col. Paper by W. C. Christopher, Chicago, Ill. "A Study of Some Cases of Chronic Diabetes," by N. S. Davis, Jr., Chicago, Ill. Paper by C. S. Bond, Richmond, Ind. "Typhoid," by W. C. Dabney, (University of Virginia) Virginia "A [illegible] ls Hutchinson, Des Moines, [illegible] D. C. Paper by R. L. Mirsler, Baltimore, Md. "The [illegible] Agent in Chronic Pulmonary Tubercu- [illegible] ville, N. C. "A New Anerobic Bacillus [illegible] G. Novy, Ann Arbor, Mich. "Progressive [illegible] Judson Daland, Philadelphia, Pa. "On the chronic Bright's Disease other than Typical Albuminuria," by D. D. Stewart, Philadelphia, [illegible] rs, Luis Razetti N. Guardia, Caracas, Venezuela. "La Folie cher le negre," by J. B. Da Lacerda, Rio de Janeiro, Brazil. "La Cause de la Fievre jaume," by J. B. Da Lacerda, Rio de Janeiro, Brazil. "A New Disease of the West Indies," by Cuthbert Bowen, Barbados, West Indies. "The Bacteriology of Dengue Fever," by J. W. McLaughlin, Austin, Texas. "Culture of Anerobic Bacteria," by F. G. Novy, Ann Arbor, Mich. "Consideraciones sobre dos Casos de Anemia por Ankylostoma duodenale observados enal Hospital Victor Manuel de Lima" by J. B. Agnoli, Lima, Peru. "A Contribution to the Study of Prolonged Intermittent Fever," by David Lobo, Caracas, Venezuela "The Nature of the Germicidal Constituent of the Blood Serum," by Victor C. Vaughn, Ann Arbor, Mich. "On Vaso-Motor Ataxia," by J. Solis Cohen, Philadelphia, Pa. "Recent Experiences in Croupous Pneumonia with Observations on Treatment by Subcutaneous Inspections of Saline Solutions," by R. F. Cunningham, Birmingham, Ala. "Cholera; its Diagnosis, Prognosis and Treatment," by J. M. Hurley, San Bernardino, California. "Colera Morbo Asiatico," by Santiago Hernandez, Santa Clara, Cuba. "T [illegible] ng Pelvic Diseases in General Diagnosis," by [illegible] Mo. "Clinical Notes on Amœbic Dysentery," [illegible] Texas. "Some American Ideas about Chro [illegible] m Cutter, New York City. "Tratamento medico del vomito negro," by Segundo Bellver Mateo, Havana, Cuba. "The Principles of Immunity and Cure in the Infectious Diseases," by Victor C. Vaughn, Ann Arbor, Mich. "Forced Respiration—Fell Method—A Plea for its General Adoption in Hospital and Naval Practice," by Geo. E. Fell, Buffalo, N. Y. "Nutrition vs. Stimulation in the Treatment of Chronic Diseases," by W. H Maxson, California. "The Complicating Conditions Associated Diseases and Mortality Rate in Erysipelas," by James M. Anders, Pennsylvania. "Filaria," by G. DeSaussure, South Carolina.

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**Conference of State Boards of Medical Examiners.**—The following circular has been issued:

HELENA, MONTANA, August 1, 1893.

Secretary State Board of Medical Examiners of ———

*Dear Doctor:*—At the recent meeting of the National Conference of State Medical Examining and Licensing Boards, held at Milwaukee, June 7, 1893, it was the expressed desire of the members present that during the present year all State Boards should be enrolled as members of the Conference, and that the next meeting be made one of more than ordinary interest and profit to us in our work of elevating the standard of medical education.

It is also desirable that there be established closer relations between the various Boards so that there may be an interchange of ideas, and an active coöperation in all that pertains to higher medical education.

In order to bring this about there is much to be done and immediate action should be taken.

As secretary and treasurer of the conference I earnestly request your aid and assistance in accomplishing the desired end. I therefore ask that the members of your Board, if not already enrolled, become members at once by sending in their applications and first annual fee of $2.00.

That the Records of the Conference may be made complete, kindly send me as soon as possible copies of your Medical Practice Acts, Reports, (as complete files as convenient), circulars or other documents that will aid in tabulating and recording the work of the various Boards. These reports, etc., will be carefully kept on file for future use and become the foundation of a history of State Medical Examining and Licensing Boards and the work done.

From time to time you will be communicated with upon matters of mutual interest, and I trust you will, in turn, keep this office informed of all matters of importance, by communications, reports, circulars, etc.

We have a most important duty to perform, and it will succeed if all will enter into it with zeal and determination.

The next meeting will be held in San Francisco during the meeting of the American Medical Association.

Very truly yours, C. K. COLE, *Secretary*.

# DOMESTIC CORRESPONDENCE.

## Analysis of "Cerebrine."

*To the Editor:*—I send you this very valuable contribution of Prof. Delafontaine (whom you must know as one of our best analytic chemists), on the chemical composition of Hammond's cerebrine and medulline. This examination was made largely at my suggestion. I found what I supposed was the physiologic action of nitro-glycerin by internal administration, and so reported to Mr. Baker, and he suggested that an examination be made of it by Prof. Delafontaine, which has been done, and I hope you will publish the results in your journal. Yours truly,

D. R. BROWER.

Some time ago, Mr. Baker of the firm of Gale and Blocki, asked me to make a chemical investigation of a sample of a drug in a small triangular blue glass bottle, labeled "Sterilized Solution of Cerebrine, prepared solely by Columbian Chemical Co., New York," with a fac-simile of William A. Hammond's signature in red ink across the label.

On experimenting on himself with that drug, Mr. Baker felt the rapid and powerful effect of a more than full dose of nitro-glycerin, which made him strongly suspicious of the presence of the latter in that alleged cerebrine. Having put five drops of that fluid on my tongue, I felt the same symptoms described by Mr. Baker, followed by the same occipital headache.

Then I proceeded to the chemical examination as follows: The excipient in that solution is chiefly glycerin. A part of it was treated with mercuric chloride, which gave but a faint flocculent precipitate. No change with potassium iodo mercuriate. Therefore, absence of ptomaines or other organic bases. To another part of the liquid were successively added diphenylamine hydrochloride and strong sulphuric acid, which developed the intense deep blue color characteristic of *nitric acid* or *nitrates*.

A few drops mixed with ferrous sulphate and sulphuric acid produced the brownish color also characteristic of nitrates. On the other hand, sulphanilic acid used in conjunction with dilute hydrochloric acid and naphthylamine hydrochloride failed to show the presence of nitrous acid or its salts. Now, one of the properties of *nitro-glycerin* is that it is decomposed by alkalies into a number of compounds, among which are *nitric* and *nitrous* acid.

Some of that combine was saponified by caustic soda and the excess of alkali sursaturated. One-half of the fluid gave with diphenylamine the nitrate reaction. The other half showed the beautiful red color due to tritrites when treated with sulphanilic acid and naphthylamine. Thus it is seen that the cerebrine solution is also saponified by caustic soda with the production of nitric and nitrous acid. I have also experimented on an unbroken package of *medulline* prepared by the same concern. Physiologically and chemically the results were the same, so that it is unnecessary to describe them.

On the other hand, a sample of cerebrine made by another firm proved to be physiologically inert and utterly failed to give any of the color reactions described in the foregoing lines.

The chemical reactions of Hammond's cerebrine and medulline fully agree with the physiological effects in that they point out the presence of nitro-glycerin, or some very closely allied product which does *not* preëxist in the ox brain. Personally, I do *not* believe *in* some putrefactive process generating a *nitrate* in the Hammond's product. The absence of ptomaines excludes that theory.

Chicago, Aug. 18, 1893. M. DELAFONTAINE.

## MISCELLANY.

**He reads the Journal.**—The editor of the *Pittsburgh Medical Review* reads the Journal carefully, and a recent number of that valuable periodical points out a typographical error that escaped the eye of the proof reader of the Journal some numbers back. He does well when he reads the Journal. People are always improved by reading carefully the excellent original papers exclusively furnished the Journal. The medical news, always fresh, crisp and sparkling as it appears in the Journal, refreshes the reader like a mid-summer draught from a cool natural fountain, and even advertisements when they appear in the Journal have an added charm and an interest to members of the Association which they can not take in advertisements when they appear elsewhere.

**Sir B. W. Richardson.**—Dr. Richardson, the well known sanitarian and editor of *Asclepaid*, has been knighted by the Queen of England, among those, receiving "birthday honors." Dr. Charles Cameron has been made a baronet on the same occasion.

**Local Anaesthesia from Aristol.**—Several observers have called attention to the soothing effects of aristol when applied to painful exposed surfaces. This has been especially noted when aristol has been employed as a dressing for burns, bed-sores, and blisters, or for irritating ulcers. At the same time, the analgesic action of aristol does not interfere with the strong healing power necessary to a prompt cicatrization of denuded areas, while it seems to favor the growth of normal granulating surfaces. It is not easy to say just how far the power of aristol as a local anæsthesia may be made useful in the operation of minor surgery, but some recent experiments point to a probable new field of usefulness for this remedy in the direction cited. The following paragraph from the *Kansas Medical Journal* is quite significant as showing that the advantages of aristol as an analgesic have not passed unobserved: Dr. S. M. Riggs has made some interesting experiments in the use of aristol as a local anæsthetic. A hypodermic injection of a solution in glycerine was made on a kitten with the result of complete local anæsthesia. The animal made no resistance to a cutting operation and was apparently unaware of being injured. The advantages of using as a local anæsthetic the same drug which was afterward to be applied to the operation wound as a cicatrisant would of course, be very important.

**The William F. Jenks Memorial Prize.**—The third triennial prize of five hundred dollars, under the deed of trust of Mrs. William F. Jenks, will be awarded to the author of the best essay on "Infant Mortality during Labor, and its Prevention." The conditions annexed by the founder of this prize are, that the "prize or award must always be for some subject connected with Obstetrics, or the Diseases of Women, or the Diseases of Children," and that "the Trustees, under this deed for the time being, can, in their discretion, publish the successful essay, or any paper written upon any subject for which they may offer a reward, provided the income in their hands may, in their judgment, be sufficient for that purpose, and the essay or paper be considered by them worthy of publication. If published, the distribution of said essay shall be entirely under the control of said Trustees. In case they do not publish the said essay or paper, it shall be the property of the College of Physicians of Philadelphia."

The prize is open for competition to the whole world, but the essay must be the production of a single person.

The essay, which must be written in the English language, or if in a foreign language must be accompanied by an English translation, should be sent to the College of Physicians of Philadelphia, Pennsylvania, U. S. A., before January 1, 1895, addressed to Horace Y. Evans, M.D., Chairman of the William F. Jenks Prize Committee.

Each essay must be typewritten, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The Committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year.

The Committee reserves the right not to make an award if no essay submitted is considered worthy of the prize.

College of Physicians of Philadelphia, N. E. corner Thirteenth and Locust streets, James V. Ingham, Secretary of the Trustees.

**Eleventh International Medical Congress.**—In consequence of the sanitary condition of several of the European States, *which prevents their medical men leaving home, and following* the advice of many of the most prominent scientists, both Italian and foreign, the executive committee of the above Congress has decided, by a large majority, to postpone the meeting till April, 1894.

The exact date of the inauguration will soon be fixed.

## THE PUBLIC SERVICES.

### Naval Delegates.

Secretary Herbert has detailed Medical Director A. J. Gorgas, Surgeon C. A. Siegfried, Surgeon H. G. Berger and Passed Asst. Surgeon D. M. Guiteras as representatives of the Navy Department at the Pan-American Medical Congress which is to meet in Washington, D. C.

### Army Delegates.

Special orders from the Adjutant General's Office, Washington, D. C., dated August 18, detail four officers to represent the Medical Department of the Army at the Congress. They are Colonel Bernard J. D. Irwin, assistant Surgeon General; Lieutenant Colonel Dallas Bache, deputy Surgeon General; Major David L. Huntington, Surgeon, and Major Charles Smart, Surgeon.

**Army Changes.** Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from August 12, 1893, to August 18, 1893.

Lieut.-Col. John H. Janeway, deputy Surgeon General, retirement from active service August 12, 1893, by operation of law, under the provisions of the Act of Congress approved June 30, 1892, is announced. By direction of the President.

First Lieut. Harlan E. McVay, Asst. Surgeon (San Carlos, A. T.), is granted leave of absence for one month, to take effect when relieved by another medical officer, with permission to apply for an extension of fifteen days.

Major Henry R. Tilton, Surgeon U. S. A., is granted two months' leave of absence, when relieved from duty at Fort Wayne, Mich.

First Lieut. James D. Glennan, Asst. Surgeon U. S. A., is granted leave of absence for twenty days, to take effect upon the conclusion of his examination for promotion.

**Navy Changes.** Official list of changes in the Medical Corps of the U. S. Navy for the week ending August 19, 1893.

Surgeon A. M. Moore and P. A. Surgeon C. W. Rush, placed on retired list.

Asst Surgeon R. M. Kennedy, promoted to P. A. Surgeon.

Medical Director J. H. Clark, Medical Inspector C. H. White and Surgeon J. L. Neilson, ordered as members medical examining board.

P. A. Surgeon M. F. Gates, from Naval Hospital, Portsmouth, and recorder naval medical examining board, September next.

P. A. Surgeon A. R. Wentworth, ordered to Naval Hospital, Portsmouth, N. H.

Medical Director A. C. Gorgas, Surgeons C. A. Siegfried and H. H. Berger ordered as delegates to Pan-American Medical Congress.

Surgeons B. S. Mackie and L. G. Henneberger, to Naval Academy to examine applicants for admission to Naval Academy.

### LETTERS RECEIVED.

**(A)** Adams, S. S., Washington, D. C.; Alden, C. H., St. Paul; **(B)** Buckley, E. W., St. Paul; Bishop, S. S., Chicago; Boyers, J. S., Decatur, Ind.; Breaky, J. R., Alma Center, Wis.; **(C)** Christian, E. A., Pontiac, Mich.; Cone, Andrew, New York, N. Y.; Cole, R. Beverly, San Francisco; Chancellor, E., St. Louis; Cobb, Myron W., South Bend, Ind.; **(D)** Duhring, L. A., Philadelphia; **(F)** Ferguson, A. H., Winnipeg, Manitoba; **(G)** Gibbons, Henry, Jr., San Francisco; **(H)** Hughes, C. H., St. Louis; **(J)** Johnson, W. J., Chicago; Jones, Thos. R., Milwaukee; **(L)** Love, I. N., St. Louis; Laidley, L. H., St. Louis; **(M)** McKelway, Geo. I., Philadelphia; Moulin, E., Rome, Italy; Malsbary, G. E., Cincinnati; McClary, C. E., Syracuse, N. Y.; **(P)** Pepper, Wm., Philadelphia; Parke, Davis & Co., Detroit, Mich.; **(R)** Reymond, J. P., Kansas City; Reed, C. A. L., Cincinnati; **(S)** Smith, A. Noal, Dover, N. H.; **(T)** The Ruggles-Gale Co., Columbus, Ohio; **(V)** Vetter, J. C. & Co., New York, N. Y.; **(W)** Woodbury, Frank, Philadelphia; Wyckoff, R. M., Brooklyn, N. Y.; Waukesha Lithia Spring Co., Waukesha. Wis.

# The Journal of the American Medical Association

Vol. XXI. CHICAGO, SEPTEMBER 2, 1893. No. 10.

## ORIGINAL ARTICLES.

### LACTATIONAL INSANITY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY GEORGE H. ROHÉ, M.D.

*SUPERINTENDENT OF THE MARYLAND HOSPITAL FOR THE INSANE; PROFESSOR OF THERAPEUTICS, HYGIENF AND MENTAL DISEASES IN THE COLLEGE OF PHYSICIANS AND SURGEONS, BALTIMORE, MD.*

Nearly all writers upon insanity describe the mental derangements occurring during pregnancy, the puerperium, and the nursing period under the collective title "puerperal insanity." Careful observation will, however, show certain points of distinction which may be noted, both in the symptomatology as well as in the causative factors of these mental disturbances.

Those authors who classify puerperal insanity into the insanity of pregnancy, of the puerperal period proper, and of the lactational or nursing period, arbitrarily assume that the latter begins six weeks or two months *after* labor. In a general way this limitation though arbitrary may be accepted, for obstetric authors count as belonging to the puerperium that period of time occupied by the involution of the parturient organs which is usually stated to be six weeks.

Prolonged or excessive lactation is given as the chief cause of insanity occurring during the nursing period. In most cases this is probably true, yet there are some cases in which the disease must be attributed to other etiological factors.

Recent careful study of insanity during the lying-in period has shown its frequent dependence upon septic puerperal processes. Certain observations of my own presented to this Section at the last annual meeting may, I think be regarded as confirmatory of this view. In studying the causes of insanity during the period of lactation, however, not sufficient discrimination has hitherto been exercised by writers upon the subject, although Gooch as early as 1829 called attention to the necessity of such discrimination.

Even in cases where the psychical symptoms of the attack are carefully recorded too little attention has been paid in my opinion to the bodily condition. Of course such marked characteristics as anemia or unusual emaciation could not fail to be noted by the most superficial observers, but the cases where a careful and thorough examination of the condition of the bodily organs has been made are rare. In insanity the psychical phenomena are *generally so* striking as to overshadow bodily anomalies and thus these fail of notice.

Among the most recent authorities, however, Dr. Bevan Lewis regards the exhaustion and sequelæ of labor, and defective uterine involution as important etiological factors, especially in the earlier cases of lactational insanity. Levinstein-Schlegel also, lays stress upon local diseases and displacements of the pelvic organs as causes. "It appears," says this author, "that the local (pelvic) irritations acting upon the central organ (brain) are active, both as determining the duration as well as the course of the mental disorder."

The following cases of insanity beginning during the nursing period have been admitted to the Maryland Hospital for the Insane in the last two years. They form 7.4 per cent. of the total number of women admitted during this period. The cases may be classed clinically as melancholia two, mania one, and confusional insanity two. Of the latter, one died and the other progressed to profound consecutive dementia. The case of mania was discharged after six months' treatment practically recovered. One case of melancholia was discharged recovered after repairing a badly lacerated cervix uteri; the other case is still under treatment though much improved.

*Case 1.*—A. H., a well developed Jewess, 27 years of age; been married three years and is the mother of two children, the youngest being five months old. There is no family history of insanity. The patient's parents are sober and industrious. She has not used alcohol or opium. About ten years ago she had an attack apparently of an hysterical nature from which she recovered completely.

About five months previous to admission she gave birth to a child. The labor is reported to have been normal in all respects. Four months afterward she had an inflammation and abscess of one breast and immediately following it a change in her mental state was noticed. She would talk to herself and imaginary people. She lost interest in her home occupations and in her children. These symptoms increased. She became noisy, talkative, restless, running about the house and screaming at the top of her voice. When spoken to she paid no attention. Her husband and friends lost all control of her. Her language became exceedingly vulgar, profane and obscene. She was always trying to divest herself of her clothing. There were evidently hallucinations of hearing.

On November 2, 1891, she was admitted to the hospital. The symptoms mentioned above were present. In addition her appetite was very poor, she was restless, running up and down the ward, screaming, laughing and crying at intervals, constantly unbuttoning her clothing, disarranging the things in her room and soiling her bedding and clothing. She slept badly and kept her roommate awake most of the time.

A note dated November 21, 1891, says: "She is still restless, talkative night and day, refuses to eat until threatened with forcible feeding, wants constantly to undress herself, very untidy, annoys her roommate at night, soils her bed and room.

This condition continued until December 30, when she became much more composed, less talkative, and more cleanly. She also showed interest in her surroundings and in the visits of her friends.

Her improvement continued from this time and on May 22, 1892, she was discharged well. At this date May 20, 1893, she remains well.

*Case 2.*—Mrs. M. B., a cultivated white woman of American descent, 49 years of age. She has had five children. Her disposition was always cheerful before she was taken with her mental trouble. Hereditary taint was denied, but her father was intemperate. Her first attack of mental derangement, melancholic in character, came on four months after the birth of her youngest child. From this attack she recovered in four months. Four years later she had a similar attack from which she recovered in six months.

The present attack began suddenly three weeks before admission. She had simple melancholia, was low spirited, cried, lost interest in her daily pursuits and had delusions of having committed the unpardonable sin. She had no suicidal tendencies. On admission September 10, 1892, no hallucinations were discoverable. She took no interest in her surroundings, desired to be alone and avoided the other patients. She was often found in her room crying. She would not volunteer any remark, but when pressed would manifest the old delusion of having forfeited the mercy of Providence.

This patient is still in the hospital, but has greatly improved since her admission. She is more lively, at times quite cheerful, takes interest in the happenings about the house and the welfare of the other patients, walks out in the garden on pleasant days, and if no relapse occurs will soon be able to return to her home and family.

*Case 3.*—Mrs. F. W., a white woman 38 years of age, married eleven years and mother of five children. Distinct hereditary history of insanity. Her last child was born in March, 1890. Four months afterward she showed the first symptoms of mental derangement. Previously she had always been neat, industrious and cheerful. No history of the habitual use of opium or alcohol could be obtained. About a week preceding the outbreak she complained of a peculiar sensation in her head and very profuse menstrual flow. The attack came on suddenly with delirium followed in a few days by mania. She fought, swore, talked incessantly, was restless and unable to sleep. Her conversation was incoherent and disconnected. She twice attempted suicide, once by jumping from a window and the second time by hanging. She was committed to an asylum where she remained two years and thence transferred to this hospital on October 22, 1892.

When received she was in a condition of advanced dementia. She is apathetic, listless, refuses to talk, is dirty in her habits, soiling her clothing and bedding constantly. Saliva is always dribbling from her mouth and adds to the repulsiveness of her expression. She requires constant urging to take her food. Sleep is good. Her physical condition is bad. A vaginal examination a short time after admission revealed a bad laceration of the cervix but no appreciable abnormalities of the uterus or ovaries.

At the date of writing she has passed into deeper dementia.

It would be hazardous to express the opinion that attention to the laceration of the cervix at the proper time might have stayed the progress of the mental alienation; but shall the neglect of the physician who for two years saw this patient every day, who was or should have been familiar with her history and who failed to inform himself of her bodily condition by a thorough examination, be passed over in silence? Did he do his whole duty by this woman?

*Case 4.*—Mrs. I. H., a white woman of English birth, 32 years of age, and the mother of three children. She has been married ten years. No history of insanity in the family Her disposition was cheerful; she was industrious and exceptionally neat in her household. She was not addicted to the use of opium or alcohol. Her labors had all been normal, and the menstrual flow had always been regular and normal. Since the birth of her last child her physical health had gradually failed. Six months after the last labor she began to get careless about her house; her disposition changed. She became talkative, irritable, forgetful, indifferent to the condition of her children. She would gad about among the neighbors, and accuse them of spreading stories about her. All this time she continued to nurse her child, and when admitted to the hospital, eleven months after the birth of the child, her breasts were very tumid.

She was brought to the hospital March 2, 1892, a typical case of confusional insanity. She was very much emaciated and anemic. She was incessantly talking in the most confused and incoherent manner. Occasionally the delusion was apparent that she fancied her neighbors talking about her, but her attention could not be concentrated upon any subject. Her condition was more nearly that of acute delirium than of mania. She had no appetite and slept only after the administration of hypnotics. She soiled her clothing and bed.

Her physical condition which was bad at the time of admission did not improve. Her tongue became very dry, her pulse rapid and weak, and in spite of stimulating and nourishing diet and rest in bed she grew weaker and died on March 20, eighteen days after admission.

The pelvic organs in this case were normal. The history points to the exhaustion of the nursing as the cause of the mental aberration. Earlier stimulation with removal of the source of exhaustion might have saved her life.

*Case 5.*—Mrs. L. B., aged 28 years, white, was married eighteen months before admission. Three months after her marriage she had a child the paternity of which was admitted by her husband. No history of insanity in her family. Five months after her labor she began to grow depressed and troubled about her disgrace. She became listless and careless in her household duties, would often be found crying, was restless and twice attempted suicide. She was admitted to the hospital on December 9th, 1892, with simple melancholia. She has no delusions. Her conversation is rational and connected, but she is very much depressed. She begs to be allowed to go home or to die. At intervals she brightens up somewhat but again becomes depressed. Her nutrition is fairly good, temperature normal, pulse eighty and regular, tongue slightly coated, urine normal in quantity and composition.

Vaginal examination revealed a ruptured perineum, and a deeply lacerated cervix, the tear on the left side extending nearly to the vaginal junction. The right ovary was tender and probably adherent.

One month after admission her improvement not having been very marked, the cervix was stitched up with silkworm gut. The improvement was notable from the day of the operation. The patient became cheerful, happy, interested in the work about the ward, and was discharged completely recovered three weeks later. At the present writing she continues well.

It will be observed that there is nothing distinctive in the symptomatology of these cases; nothing except the outbreak during the nursing period, by which they could be recognized as "lactational insanity." Hence the term, "lactational insanity" in no way designates an especial form of insanity.

Gooch, with the clearness of the accurate clinical observer says: "If a physician was taken into the chamber of a patient whose mind had become disordered from lying-in or nursing he could not tell by the mere condition of her mind that the disease had originated in these causes." Stress is laid upon this fact because the question is often asked whether puerperal and lactational insanity do not have characteristic symptoms.

The prevailing impression is that the preponderating proportion of these cases are cases of mental depression or melancholia, but this is not borne out by statistics. The cases of mania and melancholia are nearly equal.

The average proportion of puerperal insanity in its widest sense to all insanities in women is about 10 per cent. Among these the cases of lactational insanity number on an average 35 per cent. This is based on a total of 1,053 cases of puerperal insanity from various authorities, of which 371 were lactational.

The practical question of prognosis is difficult to settle by aggregate statistics. Clouston reports thirty-one out of forty recovered and three more discharged much improved, the percentage of actual recoveries being 77.5 per cent. One in forty died. Lewis reports 65.6 per cent. recoveries and 12 per cent of deaths, Ripping had 42.5 per cent recoveries and 5 per cent deaths, and Schmidt (Berlin Thesis, 1880) only 28.8 per cent recoveries and 6.3 per cent of deaths. Without further details these widely discrepant results are difficult of explanation.

Gooch, writing at a time when most physicians regarded insanity as merely a disorder of the mind unconnected with physical processes, states the problem of treating mental disease with a force and clearness not exceeded by any modern writer. He says: "We have no power by medicinal agents of relieving a disordered mind, *excepting indirectly through the disorder of the body with which it is connected.* It is therefore impossible to stir one step in the treatment of the disease without first ascertaining what this disorder is, or, if different in different cases what they are, how to discriminate them and whether experience shows that one is more common than the other." Bevan Lewis, writing from the standpoint of the alienist, says: "In most instances our patient's bodily condition claims the chief attention." The indication for treatment is therefore primarily the bodily condition, and this can be ascertained only from a careful physical examination and not from a study of the psychical manifestations. If the examination shows profound anemia, loss of appetite, etc., it is incumbent on the physician to inquire closely into the functions of the digestive, circulatory, respiratory and pelvic organs, the condition of the breasts, the existence of local sources of irritation or exhaustion in the chest, the abdomen or the pelvis. Physical abnormalities to which the mental disturbance is traceable will not always be discovered, but when found will render the treatment more rational and its results more certain.

The treatment of lactational insanity resolves itself simply into the exercise of the general principles of therapeutics. Remove sources of irritation, correct aberrant functions, restore wasted strength. These principles if consistently carried out will usually lead to success.

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# THE ESSENTIALS OF SUCCESS IN VAGINAL HYSTERECTOMY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association

BY HENRY T. BYFORD, M.D.

Professor of Gynecology in the College of Physicians and Surgeons of Chicago, Professor of Clinical Gynecology in the Woman's Medical College of Chicago, Professor of Gynecology in the Post Graduate Medical School, Gynecologist to St Luke's Hospital, Surgeon to the Woman's Hospital, *etc.*

The experience of gynecologists is gradually establishing the fact that the removal of the uterus through the vagina is not in itself a very dangerous operation. Of course there is a mortality connected with all operations involving any considerable amount of cutting, but there is nothing about the one under consideration involving any special, unavoidable danger. What there is comes not so much from the danger of the operation as from certain avoidable circumstances which may be considered under three heads, viz: 1. Unsuitable cases for operations; 2. Imperfection in the technique; 3. Mistakes in the after-treatment.

It would be absurd to maintain that unfavorable circumstances can always be avoided in practice, yet there is much to be accomplished in that direction, and a great majority of the deaths due to the operation ought not to occur.

1. *Unsuitable Cases for Operation.*—Unfortunately, the great majority of cases are unsuitable ones—they are usually neglected cases of malignant disease that come to us too late. Sometimes the patient does not apply soon enough for treatment; at other times the physician does not promptly recognize the nature of the trouble. The parts about the uterus are infected, the patient has septicemia, is anemic, or perhaps has some kidney or heart complication; or she may be too old, and yet pleads to be given her only chance for recovery.

It is our duty to examine carefully as to these conditions and select our cases more carefully. In the majority that come up for operation the malignant disease has so far advanced that we are quite certain that it will return, and in that case we should not operate except under the most favorable circumstances, lest we hasten death. Yet such is done every day. When there is great probability of a cure by operation, there is seldom septicemia nor profound anemia; and any kidney or heart trouble can be rendered much less harmful by preparatory treatment, and thus favorable conditions be obtained. A large proportion of the present mortality will be obviated when it comes to be recognized by the general practitioner that hysterectomy is for the early or simple cases instead of those already far advanced. Cases are being constantly sent to the gynecologist for a hysterectomy in which the entire pelvic cavity is infiltrated, and the medical attendant, after dilly-dallying until the fatal die is cast, finally announces that the only hope of a cure lies in a hysterectomy.

2. *Imperfection in the Technique, and* (3) *Mistakes in the After-treatment.*—Given a proper case for hysterectomy, a fatal result is due almost always to errors in the technique. So many methods have been described, and so many different maneuvers recommended that the beginner is almost necessarily at sea and is sure to employ some plausible but disastrous modifications and innovations, with a result that adds immensely to his unenviable experience. I have found that it is not the particular method employed that influences the results, except in one way, viz: in employing methods and maneuvers to suit the particular case.

I have used ligatures exclusively twenty-four times with one death; the forceps exclusively in nine cases with no death; both forceps and ligatures on the stumps in seven cases with no death; forceps to stumps and catgut to vagina and connective tissue in four cases with no death; and ligatures to stumps and forceps to vagina and connective tissue in one case with recovery. I have usually separated the bladder before making my posterior incision, but sometimes have opened the peritoneal cavity behind first. I have usually ligated or clamped from below up, but have sometimes retroverted the uterus and put on forceps from the peritoneal end of the broad ligament. I have a few times cut away portions of the cervical end of the uterus, other times I have bisected the organ. I have sometimes ligatured the vagina the first thing, at other times the last thing—at other times put forceps to its edges, and at other times have let it alone. The great thing is to see what is to be done and no more, and to do the thing required and only that.

*First of all we must secure against hemorrhage.* When the vagina is of fair size and the cervix can be pulled down, ligatures are best because we can take a proper amount of tissue, tie it firmly and safely, and have nothing in the way to prevent us from tying the next section of the broad ligament securely, and finally have plenty of free room for ligaturing or pinching arteries in the vagina or connective tissue, or of sewing up the edges. Many a woman, however, has lost her life because the surgeon could not or else did not take time or pains to tie securely. Yet he ought always to feel when he is through that the patient is not in the least danger of bleeding to death. Forceps are less desirable, because after the first one is put on it is in the way and hampers all subsequent maneuvers, because he can not always be sure that some tissue may not slip out of them, or that some old instrument, or some untried one, may not bend, break, unclasp, cut the tissue or press injuriously upon some viscus. An abundance of tissue should always be left on the uterine side of the forceps to prevent slipping, for it will all slough off at the blades, and the operation be just as thorough as if we did not leave so much tissue.

In case, however, the vagina be narrow, or the cervix can not be pulled down, or the connective tissue be too greatly thickened and altered by old inflammatory action, the surgeon should not employ the ligature, because he can not be sure of tying tightly and securely. He should then ligature such tissue about the cervix as he can ligature well, and put forceps on the rest, or should use forceps exclusively. He can usually place a forceps as far as the finger can reach, or he can place a forceps on the base of either broad ligament, cut off the intervening part of the uterus, pull the rest down a little, and place forceps higher up, cut away some more and so on (*morcellement*). It is a great mistake to attempt to include too much tissue in one pair of forceps. If we include the whole of the broad ligament the base, being thicker, will be well compressed, while the thinner upper portion may slip out and bleed. It is better to put a pair on the cervical portion or base and another on the upper portion on either side. There is a tendency to use forceps too long and slim. They should be short and thick that they may not spring at the end, or project too far out of the vulva and strike the pillow placed under the patient's knees. There are large arteries in the sacro-uterine ligaments that are sometimes not included in the first row of ligatures or clamps. These should always be sought for before the operation is finished. In seeking for these bleeding vessels without knowing where to seek them, it has happened that the upper ligatures or forceps have been loosened by rough handling.

*The next thing to do is to take the proper care of the peritoneum.* Imperfection of technique in this respect is the cause of the many deaths from peritonitis, ileus and septicemia that have occurred. While ligaturing requires the most operative skill, the management of the peritoneum requires the greatest judgment. If the intestines have been properly prepared by purging, dieting and intestinal antisepsis, there will be but little trouble in avoiding interference with them during the removal of the uterus. When the uterus is taken away there is a gap in the peritoneal cavity between the stumps, into which a knuckle of intestine is apt to fall. It is the management of this intestine and the gap under it that requires the use of sound judgment, for the advice given by different operators as found in the literature is contradictory.

In the first place we must remember that the stumps will slough, or at least the ligatures will become infected. Hence, one great problem is to prevent infection of the peritoneal cavity and septic peritonitis. To do this we must remove all débris from the pelvic peritoneal cavity, first with the sponge and, if we have operated upon a septic uterus, next by washing it out with a stream of sterilized water. If we leave débris there infection will follow as surely as the night will follow the day, for inside of forty-eight hours the contiguous stumps will stink. Having cleaned the pelvis we must prevent the adhesion of an intestine between the stumps with its accompanying danger of ileus and septic peritonitis. There are several means of doing this. The first and most important is to draw forward the omentum if, as is often the case, it has not presented itself, and place it under the intestine so as to contract the adhesions with the stump or peritoneal edges and thus leave the intestine free. If we have used ligatures on the stumps we can draw the stumps together, not pulling on the ligatures, below the omentum and sew them together, thus fixing them extraperitoneally. If practicable it adds to the safety of the patient to catch the anterior and posterior cut edges of the peritoneum and stitch them to their respective anterior and posterior vaginal edges and thus close the raw connective tissue surface, or stitch them to the united stumps, leaving an opening on either side to drain the peritoneal side of the stumps. If we have used forceps we can not approximate the stumps accurately, but can put the omentum between their upper ends. Nor can we sew the peritoneal edges to the vaginal edges. In fact, the presence of the forceps prevents us from doing any satisfactory sewing. We will have to depend upon the shielding omentum or upon a gauze tampon to hold up the intestines. And it is just here that a serious mistake is many times made; and that is to place the tampon high up among the intestines in order to hold them away from the stumps and drain the peritoneal cavity. Those who do thus forget two things, viz: that the peritoneal cavity above does not want draining but merely wants to be let alone, and that the gauze that drains the peritoneal cavity will irritate it and infect it, because infection exists in the contiguous necrotic or ulcerating stumps. The conditions would be different could we depend upon keeping the stumps aseptic. Besides, when we remove the gauze we have a foul cavity whose walls are partly formed of intestines. There is also danger of paralysis of the adherent intestines with serious results, or of ileus from a kink of compressed and adherent intestine. I believe that the vagina should always be tamponed with iodoform gauze, but in case the peritoneum can not be shut off above, the tampon should be against omentum above, and should only be put high enough to drain the stumps, and never project above them. In case there be raw tissue in the pelvic peritoneal cavity the gauze may project only far enough backward to drain these, and should be against the very bottom of the pelvic cavity and not project upwards. The less gauze that extends beyond the peritoneal edges, providing it drains the raw surfaces, the better. Drain adequately what needs drainage, but do not drain a bit more. When the gauze is removed it will usually be necessary to douche the vagina with antiseptic solutions. If the gauze has reached the intestines there will be danger of the solution breaking through the adhesions into the peritoneal cavity, as I have known to occur in two instances, happily not in my own cases, with fatal results. The adhesions, although firm in character, are sometimes not extensive enough to stand the pressure. If the gauze has not been placed too high it can remain from four to five days without causing irritation or any rise in temperature. I find that I have less temperature by leaving the tampon for at least four days. The first douche should not be given until six or eight hours after the gauze has been removed, in order to allow the parts to contract, and there should be a plain douche, given without force and with a return tube placed beside the syringe point. After that, weak antiseptic solutions should be used every eight or twelve hours without the return tube. The patient should, if possible, be kept on her back for forty-eight hours or until the omentum has become adherent over the peritoneal opening or wound.

All of these particulars may not seem important, but if carried out will be followed by a recovery without tympanitis, without abdominal tenderness, without high temperature and, I am almost tempted to say, without danger.

I have adhered to them in thirty-seven cases, being careful to omit no detail that would add only a little to the security of the patient, and have had the good fortune to lose only one patient from the operation, although I am sorry to say that, owing to the advanced stage of disease, a large proportion of the cases of malignant disease of the cervix have died later of a recurrence. Nearly all cases of malignant disease of the uterine cavity have remained well.

To recapitulate:

1. Operate only on cases in which we can operate in healthy tissue.
2. Use the method and maneuvers adapted to each individual case—not adhering rigidly to any one for all cases.
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5. Draw the ligatured stumps together, and attach the peritoneal edges either to the vaginal edges or to each other.
6. Pack iodoform between the blades of the forceps, but do not allow the packing to project upward between the intestines.
7. Leave the packing for four days as a rule.
8. Begin douches about eight hours after the packing is removed and use a return tube *the first time.*
9. Keep the patient on the back for forty-eight hours.

Venetian Building.

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# VENTRAL HERNIA FOLLOWING LAPAROTOMY—ITS CAUSE AND MEANS OF PREVENTION.

BY HENRY O. MARCY, M.D.
BOSTON.

Although we live in the era which is denominated revolutionary in the science and art of surgery, he who proposes modifications to long-established rules should do so only after the most convincing evidence upon his part of their manifest advantage and importance. It is in this spirit that I ask the judicial consideration of my surgical friends to the following brief communication:

Laparotomy, from a great variety of causes, is now becoming so frequent that any method of improvement in its technique or results becomes of much greater importance than formerly. The attention of surgeons to the more essential factors of the operative procedures within the abdomen has very naturally caused the parietal wound to assume minor consideration and, as too often treated by even practiced surgeons, seems to be looked upon as a trivial matter. However, it is admitted that about 10 per cent. of all laparotomies result in ventral hernia, and in order to lessen or prevent this it is quite the standard rule to apply a lacing abdominal support to be worn for months. Only within a few days I have seen a patient with a painful ventral hernia upon whom laparotomy for the removal of the uterine appendages was performed in the largest hospital in New England about eight months ago. The incision scarcely exceeded three inches, and immediately upon recovery the patient was fitted with an abdominal supporter with legs like drawers to prevent the slipping of the bandage and this had been kept tightly laced even to the floating ribs, in her instance a most uncomfortable and valueless support. With our present results there is a demand to revise, and improve if possible, the methods of operation. The importance of including the peritoneum within the sutures was early shown by Sir Spencer Wells and he advised the approximation of the divided edges of the wound with the utmost care.

During the last eight years I have employed exclusively the buried tendon sutures in the closure of all abdominal wounds, except for a few months, during which time catgut was substituted for tendon, because of the difficulty I had in obtaining a supply of tendon from Australia. For more than ten years preceding this, I had used the buried animal suture in a great variety of wounds, and was led to its adoption in laparotomy because of its exceptional value in the reënforcement of the weakened structures, especially as demonstrated in operations for the cure of hernia. My method from the first, has been essentially the same. The *peritoneum is closed* separately; this may be effected by suturing in a variety of ways. For ease and rapidity, if for no other reason, the *continuous* suture is to be preferred. I employ usually the double continuous tendon suture which is easily and rapidly taken, by the use of a needle with the eye near the joint, and which by re-threading with the opposite end, permits the introduction of the suture from either side through the same puncture. The result is an even, continuous and close apposition of the serous surfaces of the peritoneum, retained at rest without undue constriction. A fine tendon should be selected for this purpose. When one of the recti has been incised, as is usually the case, it is better to rejoin the muscle by a row of sutures. This finished, I consider the accurate coaptation of the thick, investing fascia (*linea alba*) of the first importance. This is preferably effected by a line of sutures taken in a similar manner to the one closing the peritoneum. The more or less thick layer of fatty tissue is preferably brought into apposition by one or two light lines of running sutures, usually taken with a medium sized, full curved Hagedorn needle, introduced from side to side deeply through the uninjured structures. Care is taken that the introduction of the needle commences exactly opposite the emergence of the preceding stitch, the importance of which is *twofold.* First, that the coaptation of the edges of the wound may be accurately effected; and secondly, of not less importance, that the suture itself may cross at right angles to the divided tissues, so *that* when drawn through that the patient is not in the least danger of bleeding to death. Forceps are less desirable, because after the first one is put on it is in the way and hampers all subsequent maneuvers, because he can not always be sure that some tissue may not slip out of them, or that some old instrument, or some untried one, may not bend, break, unclasp, cut the tissue or press injuriously upon some viscus. An abundance of tissue should always be left on the uterine side of the forceps to prevent slipping, for it will all slough off at the blades, and the operation be just as thorough as if we did not leave so much tissue.

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In quite three hundred laparotomies, where a complete closure of the wound has been thus effected, I recall but two cases of ventral hernia following the operation. In one the most pronounced, the incision was necessarily a long one where I removed a large uterine myoma, but the hernia was attributable far less to the length of the wound than to the extreme thinness of the abdominal wall, which had become atrophied in an extraordinary degree because of the projection of the tumor, which had the appearance of having taken "deck passage."

In the second, there is a small opening through the fascia, very probably caused by separation and nonunion of its edges.

Undoubtedly one of the most common causes of hernia is the routine use of drainage tubes, by which a portion of the wound is necessarily kept open, so that primary union cannot take place, and a portion of the wound heals by granulation. Although I have never refused operation, whenever I have felt the patient's condition demanded, I find the use of the drainage tube in my practice has scarcely exceeded 3 per cent. A second and common cause of ventral hernia is the imperfect coaptation of the parts by the use of the interrupted suture; even when taken with the utmost care, they constrict the tissues at intervals and are usually tied very tightly, in order to prevent bagging or separation of the abdominal wall between the sutures. This necessarily narrows, perhaps even to a third, the thickness of the coaptated structures, and if any of the enclosed tissues are separated, it is necessarily that portion midway between the loops of the stitches; the thickened, reënforced connecting tissue fascia (linea alba) upon the integrity of which the parietes depend in the resistance of intra-abdominal pressure. The importance of thus closing the abdominal incision appears sufficient to warrant emphasis to be made upon it, since the results of other operators, as well as my own experience, confirm the exceptional value of this procedure.

The suture, itself aseptic, aseptically buried, in aseptic wounds, marks one of the greatest advances in modern surgery, and he who is master of the technique of its application has acquired a distinctive accomplishment of inestimable value and importance. Somewhat recently I examined the history of about six hundred operative cases thus treated in my private hospital with the result of less than 2 per cent. of suppurative wounds.

DR. JOSEPH EASTMAN of Indianapolis, said an aseptic wound with an aseptic suture, closed in the manner in which Dr. Marcy had repeatedly described it, marked one of the most important eras in modern surgery.

DR. M. B. WARD of Topeka, Kan., was pleased with kangaroo tendon, and had seen it used by Dr. Marcy. He thought that 10 per cent. of hernias following abdominal section was an erroneous estimate. He had only had two cases of ventral hernia in his practice. One was in the person of a fleshy lady whose weight was 196 pounds, who went home three weeks after operation. He is unusually painstaking in closing the abdominal incision.

DR. WILLIAM H. HUMISTON of Cleveland, Ohio, had had but two cases of hernia in his practice following his operation, and since adopting three rows of sutures he has had none. He got this method from Billroth's clinic.

DR. HENRY T. BYFORD of Chicago, had seen a good many cases of hernia following operations, but was quite sure they did not come from the suture material used in closing the abdominal incision. He thinks it makes no difference what material is used so long as the parts are brought together properly. If they are not properly coaptated they will not remain united, and hernia follows. An objection to the buried animal suture is that it becomes absorbed at the end of from two to four weeks, if not properly prepared, and the parts may suppurate before they become very strong.

DR. LEWIS SCHOOLER of Des Moines, Iowa, agreed with Dr. Byford that it matters little as to the material used in closing the abdominal incision. He thought the interposition of peritoneum or fat between the united parts was the chief cause of hernia.

DR. A. H. CORDIER of Kansas City, Missouri, demonstrated his method of suturing, on the board. He passes one suture through all the tissues, and maintains that it can be done so as to secure as nearly as it is possible to do it coaptation of peritoneum to peritoneum, fascia to fascia, etc. The skin is retracted, and the needle passed in sloping towards the median line.

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# VAGINAL LIGATION OF A PORTION IN THE BROAD LIGAMENT OF THE UTERUS FOR UTERINE TUMORS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty fourth Annual Meeting of the American Medical Association.

BY FRANKLIN H. MARTIN, M.D.
CHICAGO.

The operation consists in the ligation from the vagina of more or less of the broad ligament with its vessels and nerves, the extent of the ligation depending upon the result sought, from a simple ligation of the base of the ligament, including the uterine artery and branches of both sides, without opening the peritoneum, to a complete ligation of the ligament of one side, including both uterine and ovarian arteries, with partial ligation of the opposite ligament, without opening the peritoneal cavity, if possible, but doing so if necessary.

The doctor reported five cases; two of these were reported in his first report of the operation. The result in the five operations were given up to date.

*Case 1*, in which the operation was incomplete on account of insufficient ligation of one ligament, has not resulted as favorably as one could wish. Tumor not materially affected. Hemorrhages ceased temporarily. Subsequent reports show hemorrhage increasing again. The patient thinks that the tumor has increased somewhat. Dr. Martin has not had an opportunity to examine the patient in several months. On the whole the hemorrhage is less than formerly and the tumor not materially increased, although the operation can not be said to be a success.

*Case 2.*—Patient had large tumor, eight by five inches in diameter and suffered severe pain and constant hemorrhage for several years. In a state of complete invalidism.

Patient left hospital on the eighth day. She was operated on the 3rd of December, 1892. I have seen this patient every month since the operation was performed. The hemorrhage has ceased completely. There has been very scanty flow at the menstrual period. All pain has ceased. The uterus had materially reduced in size at the end of one month. At the end of three months it was but little larger than a normal uterus. The patient's health has improved so that from a state of almost complete invalidism she was transformed into a comparatively strong and healthy woman. The improvement was progressive from the day of the operation.

*Case 3*—Was sent to me by Dr. Stanley of Missouri. Patient married woman of about 30, no children, with a bleeding interstitial fibroid of the uterus enlarging that organ to diameter of four by three inches. The tumor was so comparatively small I decided to ligate but one side. The patient was out of bed in ten days. The results have not been ideal. The flow has been decreased in quantity. One month after the operation at the time I saw her last there has been no appreciable change in the uterus. She writes four months after the operation, the flow is about one-third the time in duration, and one-third the amount that it was formerly. Otherwise not improved.

*Case 4.*—Mrs. S., aged 36, menstruation has always been profuse and has been constantly increasing since the age of 20. Last five years till thirteen months ago has had profuse flowing, twenty-one days in each month, while the last thirteen months it has been constant and exhaustive. Patient confined to her bed. Suffers severe pain much of the time. December 19, in the presence of the post-graduate class I made an exploratory for the purpose of removing a uterine tumor if possible or of removing the appendages. I was unable to accomplish either operation on account of universal intestinal adhesions over surface of the growth. The abdomen was closed and when the patient was sufficiently recovered to stand another operation I performed my operation upon her. This was January 5, 1893. On account of the comparatively large sized tumor filling as it did the pelvis almost completely and extending to the umbilicus above, the operation was a difficult one. I succeeded, however, after considerable dissecting in including the entire base of each ligament with its principal blood channel and branches. The flowing ceased immediately and the patient was relieved of her drain for over two weeks.

She then had a few days flowing which resembled an ordinary menstruation. She has rapidly and steadily improved since that time. She has menstruated regularly but scantily and without pain. She can at this time, five months after the operation, attend to her duties as a housewife, and considers herself cured. The tumor has reduced in size until it is no longer noticeable as a deformity and so that the patient herself is no longer conscious of its presence.

*Case 5.*—German, married, age 30. When referred to me by Dr. Geer of Chicago, there had been constant hemorrhage for three months; diagnosis, fibroid tumor about size of four months pregnancy. Patient operated on January 8, 1893. Had a little subsequent temperature, and one month after ligature from left broad ligament came away from becoming infected from the vagina. Four months after operation the menstruation only lasted two days, very scanty, no pain. Fibroid diminished in size until uterus is about normal. Patient claims that she is cured.

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New Hospital for Insane.—At the last session of the Michigan legislature there was appropriated $75,000 for the establishment of a new hospital for the insane, the present accommodations being overcrowded. There are now confined in the Kalamazoo asylum 1,100 patients; Pontiac 900; Northern asylum at Traverse City, 600; criminal insane at Ionia, 250; Wayne county, 250; Dearborn, 100; scattered in jails and county houses, 2,000. The increase of insanity in the State is from 150 to 200 cases annually.

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# THE MANAGEMENT OF PATIENTS AFTER CŒLIOTOMY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY CAREY KENNEDY FLEMING, M.D.
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GYNECOLOGIST TO DEACONESS HOSPITAL.
DENVER, COLO.

In looking over the ground for a subject to present to the Section on Gynecology at this year's meeting of the American Medical Association, I have had two objects in view: first, that the subject should be one of common interest, and second, that it should be brief. For these reasons I have selected the above title for my paper.

The remarks to be made are based upon my own experience, and one hundred cases of cœliotomy occurring in the practice of Dr. Thomas H. Hawkins of Denver; and I have been fortunate enough to have had the opportunity of studying the after treatment of each case. These cases have varied, covering the whole range or field of abdominal surgery. I cannot hope to offer anything original, but if I succeed in bringing out a discussion of the subject, possibly I will be pardoned for reading before you a paper so imperfectly prepared.

The first symptom requiring our attention after the patient has been placed in a warm bed, and recovered from the anæsthetic is nausea and vomiting. For this serious and sometimes alarming sequela we have been in the habit, as a preventive measure, of administering just before giving the anæsthetic, the following prescription:

℞.
Tinct. nucis vom, gtt. xv—xxv.
Spts. frumenti, ℥ i.
Sig.: Before giving anæsthetic.

This, in some cases, acts beneficially in preventing the nausea and vomiting after the operation, and especially so when ether has been the anæsthetic. This vomiting is sometimes quite persistent, requiring the greatest ingenuity on the part of the surgeon to combat it, also harmful to the patient, both from its depressing and mechanical action. For this condition it has been our custom to administer hot water frequently in teaspoonful doses, this in some cases acting quite nicely; carbonated mineral waters have also served a good purpose; champagne gives good results when there is or has been a tendency to collapse. Ice water or sucking ice I believe to be decidedly harmful. Morphine injections have been recommended by some writers, but according to our experience the secondary effects are most deleterious, always increasing the nausea.

*Thirst*, a condition which annoys the patient as much as nausea, is controlled somewhat by leaving the abdomen well filled with warm or hot sterilized water (if it has been necessary to flush out the abdominal or pelvic cavities); this fluid or water is rapidly absorbed by the peritoneum, quenching the thirst to a considerable degree; warm water per rectum acts often in the same way, while water administered by the mouth increases the nausea, making matters decidedly worse: the less we put into the stomach for forty-eight hours after the operation the better.

*Pain.*—Shall we give opiates to control the pain? I answer emphatically, no, excepting with those patients who have acquired the morphine habit, and of course in this class of cases it is necessary to give morphine hypodermically in doses sufficient to control them. Morphine or opium, I believe, except in that class of cases previously mentioned, kills more patients than do cœliotomies; it prevents secretion and elimination as well as stops peristalsis, causing increased thirst, nausea, tympanitis and increases the danger of sepsis and peritonitis. Restlessness is more urgent call for narcotics than is pain. In those cases where we are unable to control the patient otherwise, we are in the habit of giving fifteen to twenty drops of the deodorized tincture of opium per rectum, as often as is required.

*Laxatives.*—The use of laxatives may be commenced as early as the second day and certainly not later than the third day after the operation, and continued until peristalsis is re-established. For this purpose it has been our custom to give small doses of calomel in powders of one-tenth grain each every hour until we get the desired effect. Some patients are unable to take calomel without causing nausea; this being the case we rely upon salines and rectal enemas of warm water, sometimes containing glycerine and sulphate of magnesia. The bowels should be moved thereafter at least once in two days.

*Drainage.*—In regard to drainage in abdominal section we are accustomed to use either of two methods: first, the sterilized glass tube; second, sterilized iodoform gauze. The tube being used in those cases where pus has escaped into the peritoneal cavity, and the gauze in those cases in which we have had considerable hemorrhage, or where we fear or anticipate secondary hemorrhage, as in "bleeders," or to pack abscess cavities.

The glass tubes are usually removed in twelve hours unless otherwise indicated, and the abdomen closed by a suture which has been kept in situ for that purpose. In those cases in which the gauze has been used its removal is commenced on the second day and removed gradually, taking from twenty-four to forty-eight hours to remove the first packing. This, if necessary, is replaced by a smaller quantity and the track allowed to heal from the bottom by granulation.

*Tympanitis.*—A very important question is, how to prevent colic or abdominal distension after these operations? One important preventative is to refrain from the use of opiates for as I have already mentioned opiates paralyze the peristalsis, causing the accumulation and retention of gases in the intestines, giving rise per se to more or less abdominal uneasiness and pain and interfering with the peace and comfort of the patient. For this troublesome condition we have used quinine enemas or hot water injections, and the use of laxatives, as already mentioned, for as soon as peristalsis commences flatus is passed and the patient becomes quite comfortable. I will say in this connection, that the long rectal tube, as advised by some writers, has been but of little use in the majority of our cases. We have received more benefit from the rectal injections of a pint of warm water containing the sulphate of quinine in 10 grain doses, repeating the enemas of warm water in four hours if necessary, and the quinine twice in twenty-four hours.

*Reopening.*—The indications for reopening, I consider to be as follows, viz: hemorrhage, sepsis and peritonitis. When secondary hemorrhage occurs, the symptoms are the same as from hemorrhage of any other wound; if the symptoms cannot be controlled it is our duty to reopen and flush the abdominal or pelvic cavities with hot sterilized water; this acts as an astringent and removes the clots. Afterwards pack thoroughly with iodoform gauze in the region where the greatest surface has been denuded by separation of adhesions. This has always controlled secondary hemorrhage for us. If the hemorrhage should be caused by the slipping of a ligature from the pedicle, the bleeding stump must be caught and a new ligature applied, afterwards removing all clots from the abdominal cavity by flushing with the sterilized water.

Not having had much experience with sepsis following cœliotomy, my remarks will necessarily be limited. Still, I believe reopening and flushing out to be indicated as well as active purgation by the use of salines. In cases of general or local peritonitis the cause is undoubtedly sepsis, consequently the treatment is to reopen and flush out the abdominal or pelvic cavities and any pus pockets which may be found, also use salines to produce active purgation.

*Diet.*—In regard to the diet, as I have stated previously, the less we put into the stomach for the first forty-eight hours the better, either in the way of foods, drink or medicants.

After the first two days if there is no nausea present any liquid food, such as milk diluted with lime water, kumyss, broths and teas are very acceptable to the patient, but if nausea is present rectal feeding of predigested broths or milk is indicated.

If we are careful at the beginning in feeding our patients, it is only a question of a few days until they can have almost any easily digested foods they may desire.

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# SUSPENSIO UTERI.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY H. A. KELLY, M.D.
PROF. GYNECOLOGY AND OBSTETRICS, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

Cases of retroflexion of the uterus which can not be relieved by palliative treatment, and in which there is good reason to believe that the position and posture of the uterus have a causative relationship to persisting aches and pains, are suitable cases for the operative treatment of the retroflexion.

It should be accepted as a cardinal fact that no retroflexion should be treated by a direct operation when associated with a relaxed vaginal outlet unless the latter be repaired at the same time or as soon after as possible. In some cases it will be proper to lift up the vaginal outlet, neglecting entirely the retroflexion. In other cases the retroflexion and the relaxed outlet will be treated at the same sitting.

The best operation for retroflexio uteri is the one which is applicable to the greatest number of cases, producing the largest percentage of recoveries, and the best permanent results with the least risk.

The operation which I shall describe answers these requirements more fully than any other. It is simple, not dangerous, and its results are uniformly good.

An incision two inches long is made in the median line of the abdomen nearer the symphysis than in an ordinary cœliotomy.

After incising the peritoneum it is caught at the middle of the incision on either side with a pair of artery forceps and pulled outside the wound, and the forceps dropped in the abdomen. This insures enough peritoneum remaining after the suspension of the uterus to allow the perfect closure of the abdominal wound, otherwise the sutures used to suspend the uterus tend to rob this part of the wall of its peritoneum.

The finger then glides down behind the symphysis over the top of the bladder on to the anterior face of the retroflexed uterus, which is hooked up and drawn forward into anteflexion. Two sutures of medium sized silk are used for the suspension.

The abdominal wall on the left side of the incision is hooked up by two fingers until its peritoneal surface is exposed within for an inch. Then with a small, stout, curved needle the suture is passed so as to grasp about one-quarter of an inch of the peritoneum, and some of the fibers of the rectus muscle. The fundus uteri lying behind the symphysis is exposed by crowding the intestines back with fingers, retractors or sponges on stalks, the needle is then boldly passed through a portion of the posterior surface of the uterus below the fundus, about the same amount of uterus being included as that taken up on the abdominal wall; the suture is then drawn through, and finally the peritoneum and a part of the rectus are caught as on the opposite side of the incision. The suture is drawn taut and at once brings the uterus snugly up in slight anteflexion to the abdominal wall and at the same time approximates the three peritoneal surfaces (uterus, and abdominal wall on both sides) transfixed by the suture; the suture is then tied and a second, which is introduced with greater facility than the first, transfixes the uterine tissue a little below the first, and thus when it is drawn up to be tied, lifts the uterus a little farther into anteflexion. When the sutures are both tied, the finger is introduced into the abdominal cavity and a careful examination is made to see that the intestines and omentum have not been caught at any point above or in front of the uterus. The peritoneum and the abdominal wound are closed in the same manner as after an ordinary cœliotomy. The uterus is thus suspended in anteflexion to the anterior abdominal wall by two buried silk sutures. A few weeks later the uterus is found upon vaginal examination to be in a position of easy mobile anteflexion, without any apparent connection with the anterior abdominal wall.

I have taken for criticism in this connection all my cases operated upon by any abdominal operation in the Johns Hopkins hospital, not including those performed since the first of the year. Out of eighty cases referred from the dispensary by my assistants and from private practice by myself, forty-four were found suitable for operative treatment.

Forty-seven operations were performed; three cases requiring a second operation. Twenty-eight were married women; sixteen were single; twenty-eight had borne children and averaged about three each.

There were no deaths, and as far as I have been able to learn, no discomforts arising from the operation.

A simple suspensory operation was performed in twenty-three cases. Other operations were performed at the same sitting in twenty-one cases.

Blank applications for membership in the Association, at the Journal office

# SURGICAL TREATMENT OF UTERINE FLEXIONS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY M. B. WARD, M.D.

PROFESSOR OF GYNECOLOGY IN THE KANSAS MEDICAL COLLEGE, TOPEKA, KANSAS.

It is my desire to briefly consider the propriety of doing an abdominal section, in suitable cases, for retro-displacements of the uterus.

It is, perhaps, unnecessary that I should preface my remarks with the statement that he who dares to recommend such radical measures for an ailment so insignificant in character, is certain to be severely criticized, and perhaps charged as having an unnatural desire to use the knife when milder measures meet all the indications. It is better, however, to give our views in our own way, from our own standpoint, and cultivate that generous spirit which allows others to do the same.

In my experience, it has been extremely difficult and very often impossible to afford permanent relief in a large majority of cases of chronic retroflection, by methods usually recommended. It is comparatively easy to give temporary relief in many cases, if we will persistently treat the patient by placing her in the knee-chest position, and gently raise the fundus and tampon the posterior vault with cotton wool, saturated with boro-glycerine. I refer to this method because I consider it a good, if not the best plan of treatment. When it is impossible to replace the uterus in the normal position on account of adhesions, this treatment softens the adhesions, relieves engorgement and gives comfort. But the larger number of our patrons will give histories of long suffering, many attacks of pelvic peritonitis—some mild, and some severe—which will readily indicate that serious complications must be overcome before the uterus can be brought forward to the normal position. It is this class of cases that I am considering in this essay.

What shall we recommend as the best plan of treatment? My custom is to say to the patient that the local treatment will give comfort and, if she can exercise due patience, she *may be* permanently relieved. I always inform them of the possibility of failure. The next plan recommended is to do an abdominal section, break up the adhesions, remove the appendages—if they are diseased, bring the uterus forward and close the abdomen, all of which may be done in a few minutes safely—and your patient will speedily and permanently recover. I am again anticipating unfavorable criticism on account of the apparent unconcern which I manifest toward those much talked about little organs—the ovaries. I do not wish to be understood as one who ignores the right inherent in every woman to possess these, as well as all other organs which of right belong to her; but I do wish to be placed in that class who throw aside sentimentality and treat conditions in a common sense and scientific manner. When surgical measures are indicated as the only source of relief, we should not refuse to employ them, even though it may be found necessary to remove organs adjacent to the uterus. Let me explain still more fully my views on this subject. Many times an operation by section for retroflection may be successfully performed without the necessity of removing the appendages, but it will be necessary in these cases to take extra precaution against a recurrence by fixing the uterus in its normal position, by shortening the round ligaments, or by ventral fixation. I should not by any means remove healthy ovaries when operating for retroflection by the section method. Should I find the ovaries diseased, then I would not hesitate to remove them. There is a proviso, however, that I wish to insert in this connection, namely: when the patient is young and would naturally wish to bear children, I should not then remove the ovaries, unless they were so altered by disease as to make fecundation impossible. In view of the fact that it is not always easy to define the extent of the destruction of normal ovarian stroma, we should give the would-be mother the benefit of all doubt and leave undisturbed the suspicious ovary. On the other hand, should the patient be the mother of several children—and there is no reason why she should have more children, unless she herself desires them, I should not be so particular to give the suspicious ovary a chance to assert its normal function, if to remove it would promise great relief to the sufferer.

From my no inconsiderable experience, I am prepared to make the statement, that it is only occasionally necessary to make the fine distinction before mentioned, for in nearly all cases of chronic retro-displacements, the appendages are seriously involved and therefore diseased beyond any question.

The most satisfactory feature of the operation now under consideration, is the fact, almost universal, that the uterus will remain permanently in the anterior position without support, if the appendages are removed. It is surprising how emphatically nature asserts herself when the *guy ropes* are cut which hold the uterus in abnormal position. Immediately the uterus will go forward—almost with a bound—and reminds one of a sapling that has been bent to the ground and held, but which quickly returns to the upright position as soon as the force which binds it down is removed. So charming are the results of this operation in cases where the patient has suffered greatly for years, and has been subjected to all sorts of methods of treatment, and without permanent relief, until she has formed unfavorable opinions of the profession, that he who relieves her by this method is classed, and justly too, with the greatest of benefactors.

The next objection to this method, which I anticipate will be advanced is, that the danger to life is too great to operate in the abdomen for a condition which does not, of itself, destroy life, but only causes suffering and perhaps may do permanent harm only by establishing nervous sequelæ; this is the most important question to be considered in this connection. If it is a fact that the operation recommended is to result fatally, then of necessity we should only perform it as a dernier resort. But I contend that this operation should not give any greater mortality rate in properly selected cases than would amputation of a finger in properly selected cases. What I call properly selected cases, are those who have the endurance which will justify us in doing any kind of surgical operation of sufficient magnitude that complete anæsthesia and confinement in bed for two or three weeks would necessitate. That there is a degree of danger in any operation goes without saying and, therefore, it would be a mistake to assure the patient and friends that there is not some danger in this method; but it could be said with propriety that in the uncomplicated cases the mortality is about nil. Not more than 2 per cent. should perish. It is customary to fortify one's statements, when treating of a subject of this character by reporting cases, and I should gladly do so on this occasion, except for the reason that it is entirely unnecessary in view of the extensive experience of all present. Suffice it to say that there are a goodly number of ladies in my State who would gladly make testimony touching the renewed health—almost renewed life—they are enjoying; the result of this operation. No death has occurred to dampen my ardor, but I am always and at all times looking out for possible complications, by stating to the patient and friends that something may occur, and am on my guard, expecting something to occur that would cause all to grieve.

It is possible that I should have occupied more of the valuable time of this Section by a more detailed and elaborate classification of cases that should be subjected to abdominal section for the cure of displacements of the uterus; but I am obliged to leave to the generosity of my confrères to give the essayist the benefit of the doubt—as we would say in law—and convict him by trial before pronouncing judgment. In other words, I am not anxious to operate in the abdomen, if other methods less dangerous can be employed with good results.

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# PROLAPSE OF THE FEMALE PELVIC ORGANS.

Read in the Section of Obstetrics and Diseases of Women at the Forty-fourth Annual Meeting of the American Medical Association.

BY HENRY PARKER NEWMAN, M.D.

Prof. of Gynecology, Chicago Post-Graduate Medical School; Prof. Clinical Gynecology and Obstetrics, College of Physicians and Surgeons; Gynecologist to Chicago Public and West Side Free Dispensaries; Physician and Surgeon to St. Elizabeth Hospital; Surgeon, (department diseases of women) Chicago Post-Graduate Hospital; Secretary of the Chicago Gynecological Society; etc., etc.

It is my desire to call attention, briefly, to prolapse of the female genital organs, with particular reference to their hernial nature; regarding them as having a similar etiology, and the same pathological significance as herniæ in other situations, and amenable to analogous lines of treatment.

The classic division of herniæ into cephalic, thoracic and abdominal is incomplete without the important group comprised in the title of this paper; and, in view of their frequency and importance, they should enjoy an individual classification in herniology.

For accuracy and convenience, we would designate four major classes; cephalic, thoracic, abdominal and pelvic herniæ.

The etiology of these affections, in general, comprises such predisposing and exciting causes as defective development, including congenital malformations and inherited tendencies; depraved muscular tone through debilitating disease, and trauma.

While the majority of cases are generally attributed to traumatism, this may often in itself be the result of defective development, and inherited or acquired weaknesses or malformations.

Again, defective development represents not only the malformations of fœtal life, but the results of arrested growth at the period of ripening or puberty.

Nature aims to furnish at birth suitable rudimentary pelvic organs, and it is exceedingly seldom that she fails to do so.

In the interference of artificial influences with the natural formative conditions of puberal activity, is to be found the proper explanation of many abnormalities of development.

It is an error to designate them as fœtal malformations. Under existing conditions of custom and education the female pelvis with its complex mechanism and its importance to the race, receives altogether insufficient recognition and conservation during puberty and adolescence.

Consequently, it is too poorly fortified against the demands made upon it during menstrual and childbearing epochs.

In the face of our boasted civilization and enlightenment, we must admit that the representative of budding womanhood who is addicted to corsets, heavy skirts and high-heeled shoes; lives on hot bread, pastry, pickles and sweetmeats; and, in our cities, is in the highest grade at school, up six flights of stairs; and burns the midnight oil in the pursuit of knowledge or pleasure, is not the exception but the rule.

She is either ignorant of, or oblivious to the fact that she has an important set of generative organs which will probably be called upon one day to fulfill the purposes of their being, and that the proper performance of their future functions depends largely upon the judicious care bestowed upon the general health during the crises of development.

Rational treatment, therefore, of most gynecological diseases may begin before the affection has reached the surgical stage. This is particularly true of pelvic herniæ. An ounce of prophylaxis is worth a pound of pessaries.

The general practitioner, the family physician, has his opportunity before the specialist, and it is for him, when occasion offers, to urge upon the parents and guardians of young girls the necessity of attention to the regimen of the actively formative period of puberty.

Good food, sensible dress, a proper interchange of exercise and rest,—insist upon these things, general practitioners, for the sake of humanity's ultimate good, even if you take some bread out of the mouths of the specialists, into whose hands most neglected cases drift. The humanitarian gynecologist can well spare it. But it is not probable that his entire revenue from this source will be summarily cut off.

There is another factor in the production of pelvic disease which will furnish enough of its own victims to "keep hot the pathway to the office of the gynecologist," to quote an apt expression from a recent writer in a western journal.[1]

I refer to trauma in childbirth, and some of the prevalent evils of puerperal management, which render the normal process of reproduction a formidable menace to the after-health of the parous woman.

Many women whose puerperal histories go to make up some obstetrician's brilliant percentage of recoveries, have escaped (by the grace of God, and through no fault of the accoucheur,) with their lives, but with wrecked constitutions and dismantled pelves.

These cases, with subinvolution and torn pelvic floor, loss of tonicity of uterine and vaginal supports, furnish frequent examples of all degrees of pelvic herniæ, and a strong argument in favor of preventive therapeutics.

In a former monograph I have referred to the excellent results to be expected from direct professional supervision over the entire period of gestation from the earliest months to the completion of labor.

But the consideration of prophylaxis in pregnancy, childbirth and the puerperal state is not the object of this paper.

I have wished simply to indicate its relation to downward displacements of the pelvic contents, and would emphasize the fact, once more, that it is easier to prevent such conditions than to remedy them.

Guard against the possibility of ruptures and lacerations during labor; repair at once such as are unavoidable; and use every effort to secure proper involution and a return of constitutional tone and muscular vigor, as far as is consistent with a normal puerperal state.

For the actual existence of pelvic herniæ,—cystocele, rectocele, prolapse of uterus and vaginal walls,—prognosis and treatment depend upon the nature, degree and duration of the condition.

Much may be done in all cases, (minor cases of recent origin may sometimes be cured), by systemic treatment, attention to regimen, tonics, massage, faradism, local astringents, and removal of weight and constriction from the abdomen, with the view in all cases of encouraging the retentive power of its walls.

Proper action of the pelvic diaphragm is essential to the healthful condition of the pelvic viscera.

This cannot be accomplished with constriction at the waist, or any impediment to free abdominal respiration.

All local treatment has for its aim the restoration of the prolapsed organ, and its retention in the normal position.

A hernia is a surgical disease and calls for surgical treatment, which admits of wide interpretation and includes all mechanical means from simple air-pressure and gravitation in postural treatment to the radical operation of removal of the offending organ.

Simple restoration can usually be accomplished by taxis, preferable in the genupectoral position.

Exceptional cases, such as uterine prolapse with inversion, herniæ with adhesions or incarceration, may prove irreducible, and require special treatment, palliative or radical, as best suited to individual indications.

The retention of the replaced organ is not always an easy matter, and calls for great judgment in the selection of appropriate methods.

The simple tamponnade, combined with astringents and medicinal agents is extremely useful as a palliative measure, and in the treatment of complicating disorders, as chronic congestions, hyperplasias and inflammatory exudates.

But we can hardly expect permanently gratifying results from their use, except in recent and minor cases.

The same may be said of most other therapeutic agents and mechanical appliances, including the much-abused pessary.

The idea of both pessary and tampon is based upon the supposition of auxiliary pelvic support for its retention.

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[1] Neil Cameron, M D, Omaha Clinic, March, '93.

This is, unfortunately, just what is lacking in most cases, and steps must be taken for its restoration before either can be satisfactorily used.

The operation of perineorrhaphy, as done to-day is simple in technique, quickly performed, and efficacious in restoring the perineal body, and even where the laceration is complete is rarely followed by any but good results, if done for rectocele, or prolapse of the posterior vaginal wall.

In the same way the various colporrhaphies are most excellent in their sphere, that of reducing the volume of relaxed and prolapsed vaginal walls, but we mistake the pathology when we regard colporrhaphy as quite analogous to perineorrhaphy.

The latter removes the cause of the affection for which it is done, while the former may or may not do so.

In one instance we operate upon a substantial body, capable of sustaining the prolapsed viscus which had escaped by reason of the laxity or laceration of that body; while in the other, we have to deal with simple mucous membrane which, sooner or later, must again yield to the same opposing forces, unless the cause be removed.

It is even more fallacious to expect simple constricting of the vagina to remedy a hernia of the uterus, without any attempt to restore the anatomical relations of the parts, particularly the correct angle of uterine and vaginal axes.

A large and heavy uterus, with its abdominal supports weakened and stretched, and fundus and cervix perpendicular to the pelvic canal, will soon burrow its way through the cicatricial vaginal tissue by its own weight, supplemented by the vis-a-tergo of intra-abdominal pressure.

This tendency can be happily overcome by bringing the fundus forward into its normally anteverted position.

The three most serviceable operations to secure this result are, shortening of the utero-sacral ligaments; abdominal fixation of the fundus, or ventro-fixation; and shortening of the round ligaments.

The latter, which is known as the Alexander-Adams operation has more to recommend it, in my judgment, than any other procedure.

It is founded upon the principle not of suspending the uterus, but of using the round ligaments as guy ropes to steady the organ in its normal anteverted direction, and bring it into auxiliary relation with the natural retentive forces of the abdomen.

The operation is simple of accomplishment, may often be done without general anæsthesia, and has given me such uniformly satisfactory results that I heartily recommend it to those who desire to master its improved technique, which I have already detailed in former publications.

In conclusion, I would re-emphasize these points:

1. Pelvic hernias should be recognized and classified as such, and not as diseases of the uterus and adnexæ; and their treatment should be based upon hernial pathology.
2. Prophylaxis, in the formative stage of puberty, as well as in pregnancy and labor, is of the utmost moment in this class of cases.
3. Operations upon the pelvic floor or vaginal walls, while indispensable in their place cannot be relied upon alone to cure all herniæ of the pelvic viscera.
4. The ideal treatment is to be found in the combination of operations for repair, and those for accessory support from above, and these may all be accomplished at the same sitting, saving the delay and annoyance of repeated operations.

Venetian Building, Chicago.

## VESICO-VAGINAL FISTULA; ITS ETIOLOGY AND TREATMENT.

Read before the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY AUGUSTUS P. CLARKE, A.M., M.D.
CAMBRIDGE, MASS.

Vesico-vaginal fistula may be described as a preternatural opening between the bladder and the vagina. The communication may be located at the cervix or at the fundus of the bladder. Sometimes an opening from the urethra into the vagina takes place; an opening thus established is usually smaller and less jagged than is one situated in the neck or in the fundus of that viscus. Urethro-vaginal fistulæ may result from the compression to which the parts are exposed during parturition. It will be observed that the urethra in its oblique descent under the arch of the pubes toward the meatus urinarius occupies for some distance the anterior portion of the vaginal wall; this position exposes the urethro-vaginal tissue to many accidents during a difficult or tedious parturient process.

In those cases in which the fistula is situated in a higher segment of the bladder, sloughing that has often caused an opening may have been superinduced or hastened by labor. Many conditions which are dependent on pregnancy favor the development of fistula; such conditions predispose to disease the vesical tissues which finally require only the supervention of parturition for an actual occurrence of the morbid process.

An acute cystitis may come on during the course of pregnancy; in such cases there may be an extended vascular injection of the mucous tissue. Brownish or discolored patches may occur in the vicinity of the neck and fundus of the bladder; there will occur at first more or less induration or alteration of the vesical walls, and later there will be present a fibrinous and purulent exudation at different foci or in areas in which serious and degenerative changes have taken place. The disease may be limited to the mucous lining of the bladder; in cases in which there may be some renal complication the morbid process may penetrate the layers of the muscular coat and involve the peritoneum posteriorly in its upper zone or may implicate the vaginal wall anteriorly in its lower section. Suppuration may be dependent on the presence of minute abscesses occurring in the parietes of the bladder; ulcerative processes may also have so continued as to have led to softening, maceration, commencing gangrene or destruction of portions of the mucous and subjacent muscular structures.

Not long since I was called to an autopsy of a woman aged 37 years; she had died of acute pneumonia complicated with other serious troubles. There was found a degenerative change which had taken place midway between the fundus and the neck of the bladder. The mucous, the connective and the muscular plains in limited areas were observed almost entirely destroyed; the integrity of the organ was only kept intact by the vaginal tissue which also had become exceedingly attenuated. The patient had suffered from two miscarriages; there was also a recent corpus luteum. There was no history of unusual suffering from vesical disturbances. It is, therefore, fair to presume that had the last pregnancy continued until the end of the full term, the strain upon the tissues incident to parturition, however carefully managed, would have been followed by the appearance of a vesical opening through the vaginal wall. Chronic cystitis may result in vesical fistula. The irritation excited in the muscular coat effects an alteration of the membrane; the parietes become thickened, indurated and from the exudation of matter the parts assume a fatty or homogeneous appearance. Ulcerative and suppurative processes are liable to supervene and finally lead at some point to the presence of complete fistula.

I have notes of an autopsy on the body of a lady aged 36 years, who having suffered from the effects of chronic cystitis died of cardiac disease. The kidneys were found to be congested and to be in the initial stage of granular degeneration. The bladder was somewhat contracted; the mucous tissue between the neck and fundus had undergone degenerative changes. The epithelium or basement membrane in patches was destroyed; the muscular tissue beneath was implicated. Narrow bands of the muscular coat which had been deprived of its interstitial and connective tissue could easily be caught up on a small probe. The vaginal wall in places was much thickened, while in other places it was well nigh perforated; the bladder contained a considerable quantity of urine, though the vaginal wall opposite the ulcerated points was exceedingly attenuated. The autopsy was made twelve hours after death. The patient had suffered from an accidental abortion and had also borne one living child since she first began to suffer from the cystitis. Her entire escape from an actual occurrence of complete fistula through the vaginal wall considering the pathological condition of the cystic tissues was indeed remarkable.

Emmet[1] formerly attributed in large measure the occurrence of vesico-vaginal fistula to childbirth. Out of 202 cases which came under his care at the Woman's hospital in New York, 171 were ascribed to this cause. He considered the condition of the bladder often affected the progress of labor. When the bladder was distended the labor would be retarded and would consequently prove an indirect cause of fistula. Marriage, late in life, he also considered may have some relation to the accident. The progress of labor occurring after such late marriage, may be retarded through want of elasticity in the soft parts. Instruments employed to terminate labor have been regarded as another cause. According to my own experience, however, it is difficult to see how the proper employment of instruments can enter into the factorage of causes when it is considered that such agencies brought into activity do materially abridge the hours of labor. It is an undoubted fact that the duration of the parturient process exercises an important part in the causation of vesico-vaginal fistula for the reason that the injury is often incurred in the first or in the second labor.

In cases in which the labor is unduly prolonged, neglect to empty the bladder at proper intervals may be laid down as an exciting cause of the lesion. This should be regarded as especially so in those cases in which there has been cystitis. Some nurses who have been regarded as well trained, and even physicians of extended practice, occasionally fail in preventing in labor the bladder from becoming unduly distended. The reason given for such course in attendance is the fear that when the use of the catheter has once been resorted to it will have to be continued. This practice with such has been followed not only during the hours of labor but after its termination also, provided the patient has not demanded immediate help on account of severe suffering, or has not given indication of some passage of urine. Though in my own practice I endeavor to abstain from becoming too officious and from interfering with nature's normal processes yet I cannot but entertain much solicitude respecting the condition of the bladder especially in those cases in which there has been a history of recent cystitis. By following this method of procedure in a series of 2,500 consecutive obstetric cases coming under my care during many years of my private practice I have succeeded in preventing in every instance the occurrence of a vesico-vaginal fistula. In two cases which have come into my practice for treatment the fistula was caused by the removal of calculi through an excision above the neck of the bladder. In one instance a fistula was produced by an abscess occurring in the vaginal fornix. The opening, however, finally closed spontaneously. In one case to which I was called the injury was the result of an accident to the patient; she fell on a sharp instrument which piercing the right labium majus penetrated the vaginal wall just over the neck of the bladder. The length of the wound was nearly two centimeters. The application of sutures of annealed iron wire gave partial cure, which was subsequently completed by the employment of aseptic sutures of kangaroo tendon.

For severe cases of chronic cystitis Emmet's operation for artificial vesico-vaginal fistula is a valuable expedient. The chief objection to this method of treatment according to the records of my own cases is the difficulty in effecting a speedy closure of the incision, for when the opening has been allowed to remain for several months, without closing, the bladder becomes preternaturally contracted; the tissues also become thickened and indurated. Sometimes this condition of the structure of the bladder has supervened before the artificial opening has been made. With such factors to be dealt with the ordinary methods employed for closing the incision are often found in great measure ineffectual. A. F. McGill,[2] F. R. C. S., surgeon to the Leeds Infirmary, has given a description of an operation for vesico-vaginal fistula through a supra-pubic opening in the bladder; the operation is conducted somewhat after Professor Trendelenburg's method for supra-pubic cystotomy. Two cases are mentioned; the first operation was necessitated for the closing of a fistulous opening through the vaginal wall, accidentally made while attempting to remove an epithelioma involving the floor of the urethra for its whole length as well as part of the anterior vaginal wall, and base of the bladder. The edges of the fistula were brought into apposition; by means of supra-pubic drainage a complete and spontaneous cure resulted. The other case was an ordinary one; the injury followed labor. In this the operation through a supra-pubic incision into the bladder effected a cure. In cases in which a repeated operation fails to give relief the author advises that this method should be tried.

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[1] Principles and Practice of Gynecology, 1879.

[2] Lancet, 1890; also Retrospect, part ciii.

William Duncan[3] M.D., M. R. C. P., assistant obstetric physician at the Middlesex hospital, London, reports a case of extensive vesico-vaginal and recto-fistula cured by means of flaps dissected up as thickly as possible from the left side of the vagina with its lower end on the inner surface of the left labium majus. The flap measured one inch and three-quarters in length, and one inch in breadth. Carbolized lint was placed under the flap; eighteen days after the formation of the flap the operation was completed by freshening the edges of the opening into the bladder and fitting the flap to the fistulous track with the vaginal, mucous membrane toward the bladder. Wire sutures were employed; a self-retaining rubber catheter was introduced into the bladder. The parts united and the fistulous opening was much diminished. Repeated attempts at operative interference finally effected entire closure of the bladder. The retro-vaginal rent was closed by taking a flap from the right wall of the vagina in a manner similar to the one taken from the left side. After the edges of the fistula had been pared the flap was fixed to the margin of the opening by means of silk and catgut sutures. This lead to a perfect union and a final cure. The same author reports a case of vesico-vaginal fistula caused by extensive sloughing of the anterior vaginal wall. Closure of the vaginal wall after the method of Simon was resorted to for relief.

Herff[4] (*Frauenarzt*, 1888) after splitting the vesico-vaginal septum around the opening turned in the edges of the vesical and vaginal mucous tissues respectively. Each is united by deep and superficial sutures. Several advantages are gained by this method. Aside from splitting the septum around the fistula no further denudation is required. This method precludes the necessity of removing to any great extent the cicatricial tissue; by reason of this an important advantage is gained, for when there is much cicatricial tissue in the vaginal wall it is often quite impossible to effect its entire removal. The mucous membrane at its edges after the division of the fistulous septum can easily be brought together; the abraded surfaces after being placed in such apposition readily unite. By the adoption of this method there is no loss of tissue. The operation can if necessary be repeated; if unsuccessful the tissues will be found to have escaped from serious injury from the operative interference.

In an elaborate paper read at the Ninth International Medical Congress at Washington, 1887, by Dr. Nathan Boseman[5] of New York, emphasis is laid on the importance of dividing the cicatricial bands which often interfere with an operation for the closure of the perforated tissues. Such cicatricial bands were regarded as productive of undue strain on the coapted parts; this would occur before the tissues had united sufficiently to insure success to the operative measure. Cases have been reported in which adhesions of the anterior or of the posterior lip to some portion of the vaginal wall or fornix have prevented the uterus from being brought down to the lower segment of the vagina when an operative measure was undertaken for the closure of the fistulous tract. Inflammation from laceration or from other injury to the cervix may set up in the vaginal tissue the formation of constricting bands that will have to be overcome before an operation for the closure of the fistulous opening should be undertaken.

J. Marion Sims in his effort to bring prominently before the profession the advantages an operation affords for the relief of vesico-vaginal fistula, maintained that sutures of silver wire were the ones best adapted to secure favorable results. His operation was originally undertaken without the employment of antiseptic precautions. The unique results which he obtained were undoubtedly due in part to the use of metallic sutures; such sutures to a great extent are aseptic. The rapidity of his work and the exercise of rare skill with which it was often accomplished, compensated in large measure for deficiency in other measures of his procedure. Sims was by no means the originator of the operation for vesico-vaginal fistula. M. Jobert de Lamballe, the eminent French surgeon to the emperor, has described in his Traité de Chirurgie Plastique the operation which, as early as 1837, he performed for vesico-vaginal fistula. Mr. Gasset in 1834, gave in the London *Lancet* a good account of the operation. Sir James Y. Simpson also seems to have anticipated Sims in this line of work.

Since the employment of antiseptic precautions has been generally adopted silk sutures aseptically prepared have by many operators been largely used. Silk sutures however carefully prepared, are not altogether free from danger. The properties of silk ara not easily overcome by the action of the living tissues. The interstices of the structure of silk are liable to be invaded by microörganisms before the margin of the wound has united sufficiently to allow the sutures to be removed. Aseptic animal sutures are much to be preferred. No suture in my own practice has given so great a satisfaction; the employment of aseptic catgut sutures in vesico-vaginal fistula often yields excellent results.

Kangaroo tendon prepared according to Lister's formula are for this kind of work incomparably the best. After splitting up the septum round the margin of the fistula the deeper or vesical portion of the tissue should be brought together by means of a medium sized tendon suture. The suture should be applied after the manner of the cordwainer's stitch. After the layer of sutures has been taken through the vaginal or external tissue of the bladder the first line of sutures will be entirely concealed.

The sutures employed for the vaginal wall should be somewhat smaller than those for the vesical layer, and should be applied by introducing the needle first into one lip of the wound some distance from within by passing outward close to the edges of the coapted parts. After the sutures have been introduced the tissues through which they have been taken should be in such close apposition as to conceal all traces of their appearance. The sutures will thus be protected from the action of the fluids from the vaginal wall. By the insertion of tampons of cotton or of iodoform gauze or wool the vulvo-vaginal introitus will to a great extent be rendered aseptic. Repeated catheterization of the bladder at regular intervals will prevent undue strain upon the vesical and vaginal tissues; these measures of proceeding if properly carried out will materially help to establish a speedy and permanent cure.

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[3] British Med. Journal, 1887; also Braithwaite, part 98.
[4] American Journal, 1888; Braithwaite part 98, 1889.
[5] Transaction of Ninth International Med. Congress, Vol. 2.

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# RECENT PROGRESS IN ELECTRO-GYNECOLOGY.

Read in the Section of Obstetrics and Diseases of Women at the Forty-fourth Annual Meeting of the American Medical Association.

BY G. BETTON MASSEY, M D.
PHILADELPHIA.

The year's progress in the art of applying electricity as a remedy in the diseases of women has been of twofold character, embracing increased exactness in an art requiring technical knowledge of a high order on the one hand, and on the other an increased use of the remedy by conservative gynecologists. The allurements of a surgical ambition continue to operate as a bar to the higher electrical skill of some operators it is true, but a still greater number are becoming convinced that the diseases of women have a deeper significance than mere cosmetic accuracy of outline in pelvic organs; and that an agent capable of doing much in the cure of diseased processes, the relief of suffering and restoration of function deserves a more careful study than has been given to it by those who regard gynecology and surgery as synonymous terms.

### RESTORATION OF FUNCTION.

It is too often forgotten that the highest art of the physician is shown in the restoration of normal functionation in an organ or set of organs. In the case of the pelvic organs of women, the disparity between the current literature devoted to the removal of more or less diseased members and their cure is very great and indicates, it is to be feared, that the lesser work replaces the greater in actual practice. The prevention of diseased action in organs is of course a still higher work, but while the busy physician may be pardoned for relegating preventive medicine in some measure to the hygienist, he should not be pardoned for neglecting possible cures of diseased organs and turning his attention exclusively to their ablation and amputation. One of the benefits conferred upon gynecology by the introduction of electro-therapeutics into its remedial armament, is the recalling of professional attention to healthier channels of therapeutic endeavor by the infusion of new hope in the efficacy of conservative methods.

In this agency we have a valuable remedy for the congestions and relaxations that interfere with pelvic functions, and lead consequentially to more pronounced disease. Its control over abnormal menstruation is often successful where drugs have been found to be ineffective, and it may thus be of service in the removal of those conditions so frequently leading to positive disease of the ovaries or of the nervous system in early maidenhood. A mere external application of the galvanic current of large dose between periods, through scientifically adapted cutaneous electrodes, may be amply sufficient as a curative remedy in both amenorrhœa and menorrh-spasm; but when this has been insufficient to cure in a given case, we must use the same method during the actual attack of menstrual pain. This almost invariably ends the immediate attack, though a permanently curative effect will require at times that an intra-uterine negative application be made, and my quickest successes have been attained when the application was made during the flow itself.

On the electrical treatment of menorrhagia and uterine hemorrhage I will not dwell, as its efficiency is generally conceded, though too often not used by those who continue to employ harmful drugs or curettage.

It is not a little strange that the classical treatises on gynecology, with the exception of that of Barnes, are practically silent on the disturbances of that function which, certainly next to menstruation and conception, is most closely associated with our practical work as gynecologists. In coining and defining the term *dyspareunia*, this writer, too, but touched on a considerable field of matronal impotencies, the bearing of which upon conditions and sufferings daily encountered is far more important than generally conceded. A little research in many cases of ovarian and lumbar pain in married women will point to this as a cause, even though periuterine tenderness or displacements may be present, and particularly if catarrhal conditions of the uterus and tubes are absent. A merely physical and passive performance of a function normally requiring a most delicate co-ordination of nerves, muscles and glands cannot be other than prolific of local congestions and more general nerve aches, and this result is often found in both participators, for a law of nature has been broken which even dogs obey. The causal conditions underlying dyspareunia are not merely hyperæsthetic conditions of the vulva, on which stress was made by Barnes, but also muscular relaxations of the vagina which make it impossible for the act to be reciprocal, leading to bruising and disturbance of the internal parts, and more or less pronounced nerve strain. The connection of electro-therapeutics with this subject is obvious. In the vaginal applications of both currents we have a direct exciter of the flagging energies of the constructor cunni and levator muscles and the circular fibers of the vagina, though care should be exercised that an over-long stimulation does not lead to fatigue. The swelling method of turning the current on and off is best, and the faradic current may be applied, either bipolar or monopolar, the coarse secondary or primary coils being selected in preference. Probably the most effective exciter is the combined primary faradic and galvanic, negative monopolar electrode, the indifferent pole being on the back. This method also relieves the congestion and tenderness in the uterus and ovaries while adding tone to the muscles.

In the treatment of matronal sterility due to catarrhal disease of the uterus the galvanic current may also be relied on as of direct service, in addition to the possible results that may be derived from electricity in the associated condition just described. The method is that employed in the treatment of endometritis, with or without accompanying menorrh-spasm, and its use will be found to be far more effective than the commonly practiced operations of dilatation, and less likely to be followed by diseased tubes and ectopic pregnancies.

### THE RELIEF OF OBSCURE PELVIC PAIN.

Excluding the functional disorders that have been mentioned, acute inflammations and neoplasms, it will be found that most women apply for treatment for chronic pains and distresses of a more or less indefinable character. It becomes the duty of the physician to ascertain the cause of course, but even in case the probable cause can be located by exclusion in the pelvis, he has no more right to inflict injury in ascertaining its exact nature or providing theoretical relief than when other parts of the body are affected. An increased employment of vaginal applications of electricity is advocated in these obscure cases, in preference to so-called exploratory abdominal sections, which so frequently result in the removal of ovaries that are but slightly or not at all diseased. The electrical application may cure the case by stimulating the activity of the absorbents, and thus removing remnants of unsuspected inflammatory processes that had given rise to the distress, or by a direct action on the pelvic nerves, and if it does not thus clear up the obscurity the patient is yet in good shape for other remedies. Non-suppurative inflammations of the appendages, even prolapse of the ovaries, indicate this method, and it is often curative. To the interpolar action of the current itself we may add the action of iodin, driven into the tissues from the positive vaginal electrode by the recently revived method of cataphorosis.

### CHRONIC METRITIS.

The researches of electro-gynecology are, however, contributing towards a revival of the older views, which attributed to the uterus the chief place as the seat of chronic inflammatory trouble, as well as an avenue of infection for parts higher up. The light recently reflected on the diseases of the appendages by operative surgeons has rendered incalculable aid in diagnosis, but should not blind us to the possibilities of a continuance of the chief trouble within the uterus, demanding local treatment for its alleviation. The possibility of employing strong galvanic currents of more than fifty milliampères for this purpose without creating unpleasant irritation, has been enhanced by the use of cotton covered elastic electrodes of platinum within the uterine cavity, the cotton having been saturated with a solution of cocaine if the endometrium is sensitive, or with a watery solution of an antiseptic agent. This simple expedient will permit of the addition of cataphoretic medication of the uterus to the galvanic application with results, so far as the addition is concerned, that are yet under judgment. The value of the current itself in combating endometritis and hyperplastic metritis is well established, and its more general employment will not only remedy a numerous class of cases of recognized uterine inflammations, but also render the operations of curettage and trachelorraphy and the wearing of pessaries of rare and infrequent utility.

### FIBROID TUMORS.

With their accustomed alertness, American physicians have not only absorbed the French experiences as to the value of electricity in fibroid growths of the uterus, but have pushed the investigation farther, as evidenced by well-attested instances of actual disappearance of the tumors, several of which were reported during the year. The field of this remedy in fibroids is being more accurately delineated, as added experience teaches that it is most useful in the interstitial and intramural varieties, or when the subperitoneal buds are still sessile. But little effect can be expected in the subperitoneal variety, unless the tumor is particularly well situated for either pelvic or abdominal puncture. Œdematous myomas, or tumors that have undergone cystic degeneration, are distinctly unsuited to electric treatment, and the same may be said of all such growths accompanied by purulent degeneration of the appendages; though simple non-purulent inflammations of the appendages do not constitute a contra-indication. The interstitial tumors, both hemorrhagic and non-hemorrhagic, in which electricity is curative form a large group, and the testimony of many recent workers in the field fully bears out the statement of Keith that it should have the preference over dangerous and uncertain operations for their removal.

Among the several methods of applying the current, preference continues to be given to the intra-uterine applications. The use of vaginal punctures is confined to those cases in which the intra-uterine method is impracticable, as it rarely presents any relative advantage. I have myself reported good results from abdominal puncture in cases of large growths unsuited to other methods. Mere vaginal applications are, however, at times of service, and the possibility of contracting a myoma by external applications even has been amply demonstrated.

Being free from danger in any but reckless hands and certain to be of some service in every suitable case, the electrical treatment of fibroid tumors should be the method of choice as a remedy for these benign growths, whether hemorrhagic or non-hemorrhagic, reserving operative procedures for cases in which electricity is unsuitable. With this careful selection, the best good of the patient is assured and all apparent conflict of opinions avoided.

### CONCLUSIONS.

In recapitulation, it may be said that electricity in some one of its methods of application is indicated as a useful remedy in loss of functional tone in the productive organs; in obscure pains in this region; in catarrhal diseases of the pelvic mucous membranes, inclusive of endometritis and its consequence, sterility; in uterine hypertrophies and chronic periuterine inflammations of a non-purulent character; and in interstitial and certain subperitoneal fibroids, whether hemorrhagic or non-mennorrhagic. So much and more has been amply demonstrated and proven, under the fire of a criticism rarely bestowed on any single therapeutic agent. That definite limitations to its use have been proven is also true and almost equally important, yet of this remedy it may be said that, unlike most remedies, the limitations to its usefulness may continue in the present only, for our knowledge of the agent is of so progressive a character that the boundaries of to-day's information may be left far behind to-morrow.

212 S. Fifteenth street.

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MINNESOTA BOARD OF HEALTH.—Dr. Chas. N. Hewitt, Secretary of the State Board of Health, has issued a circular to the different boards of health. He calls attention to the dangers of small pox and cholera which may be distributed by tramps wandering around as harvest hands. He also calls attention to the means of disinfection by use of concentrated alkalies, caustic lime in the form of fresh whitewash and strong soft soap for washing floors, clothing, etc., which is very fatal to microbe growths, and if these are properly used they will add greatly to public safety for this year.

# THE PROPRIETY OF OPERATIVE MEASURES IN PELVIC PERITONITIS.

Read before the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association

BY LEWIS SCHOOLER, M.D.
DES MOINES, IOWA.

Operative interference has become so frequent in pelvic and abdominal troubles that at a casual glance it would seem that nothing had escaped, and that a paper calling attention to any one of the numerous pelvic affections would be superfluous; that all conditions for which operations were advised and practiced were fully understood; that the time for operative interference was definitely settled, and that every community had had an operation or two of this character. A more careful observation, however, will show that neither of these points are settled and without their settlement the status of operative interference is yet a debatable question.

We have arrayed on the one side the conservatives with conservatism carried to timidity. On the other, we have the reckless and amateur operators, of whom the latter are the more dangerous, not alone on account of their inexperience, but in their anxiety to become abdominal surgeons they open abdomens upon the slightest pretext.

Occasionally they may do good, but more frequently harm is the result. Cases of pelvic peritonitis differ in their effects but little from general peritonitis, save in degree and the liability to the formation of abscesses. In this respect they more closely resemble localized abdominal or circumscribed peritonitis. All occur as a result of a cause; none are idiopathic. All are affections, either primarily or secondarily, of the same extensive membrane which lines abdominal and pelvic cavities, and are accompanied by practically the same symptoms and run the same course. When moderate in degree they recover spontaneously, or with little or no treatment, and that of the simplest character, such as rest, diet and simple remedies.

Occasionally, like all other inflammatory disorders, spontaneous cure may result or, technically, resolution may occur; again, the effused lymph may become organized, and after the subsidence of the inflammation important organs may be greatly hindered in the performance of their proper functions on account of the faulty positions which the adhesions cause them to assume. Of the uterus and the ovaries this is especially true; the rectum and bladder also becoming involved. Repeated attacks increase the difficulties already named, and the consequent irritation and pain soon affect the whole nervous system; the patient becomes a wreck frequently in a comparatively short time.

In the class of cases above enumerated there can be little doubt that most intelligent medical men, as well as gynecologists, would advise an operation.

But it is not in this class of cases that difficulties are experienced in determining the course to pursue. The repeated attacks have given abundance of time for observation and reflection, as well as fair opportunity to test every known remedy.

It is in an acute case that the skill of the diagnostician and therapeutist are put to the crucial test. It is in these cases that the profession are most in need of definite rules of procedure. It is here that the prognosis is most difficult.

The peritoneal investment of a single organ may be involved as a result of a general inflammation of that organ, and this limitation may prevail throughout the course of the disease. Again, the entire pelvic peritoneal investment may be speedily involved. An inflamed uterus, a salpingitis, an ovaritis or a septic condition may prove the initial point of infection. The virulence of the inflammation may be such as to render differential diagnosis difficult or impossible.

If the formation of an abscess or a pus cavity can be made out, the rule to evacuate is imperative, but do we not wait frequently longer than is necessary for the plain indications of purulent deposits? The pointing in the direction of least resistance may not be discoverable until too late. The peritoneal cavity or the alimentary tract may receive the collection while we wait. This has occurred so often that there are none of you but who could recall lamentable instances of its occurrence.

Pyosalpinx, a not infrequent cause of pelvic peritonitis though not so easily discoverable, frequently on account of the small amount of contained pus, is another cause which demands operative measures for the reason that all else is futile. Curetting and packing with gauze the cavity of the uterus is not of itself free from danger, and is certainly not effective. The dislodgment of the pus producing germ cannot be effected in that way, although it may be said to be to a certain extent an operative procedure, yet it is one from which I have failed to secure the desired results.

Inflamed, degenerated and broken down ovaries are beyond restoration; they are not only useless but a source of danger while they remain; they are to a certain extent foreign bodies; no remedies can effect their reorganization or prevent the inflammatory conditions which they excite.

That the patient may survive many attacks of this kind is not to be questioned. The question is, however, as to the advisability of permitting a patient to experience the danger and hazards that are always present in severe cases. The disease in the male analogous to pelvic peritonitis is appendicitis. A patient having experienced one attack is almost certain of a recurrence; some light, others severe in character. As to the danger to life and the inability to determine the gravity of an impending attack, there is no difference of opinion.

Since operations have been more frequently performed, the opportunity for study of the pathology has been greatly enhanced. The terms, typhlitis and perityphlitis, and other unmeaning phrases have been discarded. The diseased organ has been discovered and the remedy applied, which to-day is operative interference, not only during an exacerbation but frequently after an attack has subsided, when apparently all functions have been resumed and to all outward appearances no disease exists.

That skilled surgeons would advise an operation when the presence of disease cannot be demonstrated by objective symptoms, would be one of the unaccountable mysteries of surgery, were it not that pathology and experience have taught us that recurrences are certain and that the interval of quietude offers advantages that both surgeon and patient should not allow to pass.

Early removals of offending organs in pelvic peritonitis are no more dangerous than in appendicitis;

the same immunity is secured, and years of pain, suffering and invalidism are avoided. Without it, localized inflammatory deposits may exist for years, their presence always manifest in some degree at least, susceptible of breaking forth at any time with great violence. If the patients be fortunate enough to escape death they frequently undergo such an amount of suffering that death may almost seem preferable.

I have recently dealt with two cases of this character. For several years repeated inflammations have occurred; neither of them had seen a well day for at least three years: both had been repeatedly confined to the bed,—one for fourteen weeks. At the end of that time she had practically made her usual recovery,—a recovery that was far from complete. Knowing from experience the certainty of recurrence she readily consented to an operation, and while the difficulties of an operation at this time were far greater than they would have been at an earlier date, the recovery was prompt and relief is complete. The second had the same history except none of the attacks had lasted so long. So intense, however, was the last one that life was despaired of at the end of two weeks. Operation was the only alternative; no preparation of the patient could be made for the want of time. The result, however, was all that could be desired. In the earlier years of my practice when operations of this kind were viewed unfavorably by the profession, I have seen many patients lost who would now be saved.

I do not wish to be understood as advocating the propriety of operative interference in all cases. Many cases apparently recover completely and patients continue to enjoy perfect health. Slight pelvic inflammations are not always dangerous, and if they do not become chronic are not seriously inimical to health and comfort.

In these cases the dangers of an operation should not be undergone; other and less hazardous measures will afford equally complete relief.

If you will bear with me for a few moments I will endeavor to formulate a rule or two for time of operations and the class of cases to which they are applicable.

The decision as to the propriety of operative measures and the time when they should be resorted to are frequently beset with greatest difficulties, and the only rule in acute cases that seems to me to apply at all generally is one laid down by some one in intestinal surgery. As soon as it is apparent that other means will be of no avail, the time for operative interference admits of no delay.

In chronic cases, or cases with frequent recurrences, or chronic cases as regards time and acute with regard to symptoms, there are two periods when operation is justifiable. The first, when life is endangered during a recurrence. The second. after the subsidence of an acute exacerbation. This I regard as the preferable period, but unfortunately it cannot be always secured, first for the reason that the acute stage may demand relief; secondly, the patient frequently refuses the tender of relief of this character while the suffering is not intense. Under this head may be included all those cases of encysted collections of pus, gonorrheal, or otherwise, tubal collections of whatever character. Diseased and degenerated ovaries, adhesions which give the semblance of tumors by the distortion of the pelvic organs, and the consequent impairment of their functions, as well as all mental and nervous disorders that are directly traceable to disease of the pelvic organs.

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## ACCOUCHEMENT FORCÉ IN CERTAIN OBSTETRICAL COMPLICATIONS.

Read before the Section of Obstetrics and Gynecology, at the Forty-fourth Annual Meeting of the American Medical Association

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Accouchement forcé, is as we understand it, a labor actively begun and terminated by artificial aid. This assistance may be rendered through mechanical devices, such as Hegar's and other dilators, Barnes' bags, forceps, catheters, sounds, tampons of cotton or wool, sponge tents, or by the hand introduced into the vagina with the fingers acting as dilators. It is our opinion the fingers are the best and safest means of assistance for the reason that the force exerted is active, appreciative and entirely under the control of the operator. The dilation may be rapid or slow, strong enough to produce a laceration of the cervix and body of the uterus, as in the case related by Parrish at the meeting of the American Gynecological Society in 1892, when discussing this subject, where the hand introduced after delivery reached the bifurcation of the aorta but surely this accident must be among the rarest of obstetric novelties. The hand is soft, it appreciates the degrees of dilation effected, it can detect the softening of a rigid os, it can recognize the tearing of a cervix and it can preserve the membranes intact. These advantages can not be claimed by any of the mechanical devices commonly employed; not one of them will afford us any positive information as to the amount of harm that is being done; they only tell us we have dilated sufficiently to require a dilator of a larger size or that we may introduce another and still another alongside of the first; they simply act as any other mechanical device.

The indications which govern us in producing labor or for dilating the os and terminating labor are, placenta prævia, uremic convulsions, excessive amount of albumen in the urine accompanied by headache, dimness of vision, anasarca, general or limited, and other symptoms leading us to fear convulsions, uterine inertia, rigid os, escape of waters with inefficient pains, spasmodic contraction of the uterus. Any one of these conditions demands our assistance, but how many of us go to a case of obstetrics with forceps and all other mechanical apparatus pertaining to the correct practice of an art; indeed, how many of us are the possessors of such appliances? For one, I plead guilty to the charge of not possessing all of them. When called to a case of rigid os, or where the pains following the premature discharge of the waters are slow, useless, inefficient, why should we send for any artificial dilator when we have with us the safest and best dilator to be found, in the fingers? Are we to allow a placenta prævia case to pass slowly but surely from our hands to a certain death if not relieved, simply because our teachers of obstetrics and our textbooks do not counsel the course I advocate? How many sorrows have been scattered, how many constitutions have been shattered, how many happy homes broken up, how many useful and talented women have gone to their untimely graves through this blind following the letter and the law of the textbooks, this ideal "follow my leader?" I am making an assault upon no teacher, upon no writer of either textbook or journal article, but it appears singularly singular that so few of our modern obstetric textbook writers mention accouchement forcé in any connection.

Charpentier says it should never be performed unless all other means have failed. Winckel says it is rarely necessary. Lust says it is next to doing nothing and is responsible for many deaths, while Müller says the maternal mortality is 30 per cent. greater than the dilation by tampon or kolprynter. King, Parvin, Galabin, Reynolds and Davis do not mention the subject. Consider for a moment the statistics of Nordman, who gives a percentage of fetal mortality of 5.8 in cases where version and immediate extraction are performed; 16.6 per cent. following the employment of the tampon and kolpenryntor; while version and slow extraction show the death of every child so delivered. In this day of scientific and exact methods in the obstetric art we must consider the claims of the child to life as well as those of the mother. Few men do a craniotomy on the living child, and as few wait until the child is dead before taking active measures so we are forced to adopt the plan of treatment which gives the best results, no matter how ancient the method may be or what may be our convictions.

It will be urged that rapid delivery will be followed by postpartum hemorrhage, shock, uterine inertia or laceration of the cervix, but we have means of checking hemorrhage in cold or hot applications; intra-uterine irrigations with vinegar; friction, ergot, electricity and the tamponade of the uterus; for the uterine inertia nothing will cause the organ to react sooner than the presence of a foreign body, and the uterine tampon of iodoform or other medicated gauze is the most harmless foreign body we possess; for the shock, we possess the same remedies we have for shock of any kind; so far as the laceration of the cervix is concerned, it will be a difficult question to decide, whether the laceration was caused by the artificial dilation or whether it depended wholly upon the passage of the child and was not one of the generally attending accidents of labor. For my part these objections do not deter me from employing this method. In looking over my case records I find this method by the fingers to have been employed in cases in which uremic symptoms were alarming, of rigid os and of placenta prævia, and my experience is embraced in part in the following brief histories:

Statistics in cases of placenta prævia are always misleading for the reason that many men will include all cases of placental attachment, marginalis as well as centralis; a partial implantation will usually prove an easy matter but the centralis will be attended by the more serious results.

*Case 1.*—M. W., white, aged 34 years, was delivered of her third child in January 1885. She complained much of headache, dimness of vision, œdema of face, body and lower limbs, urine highly albuminous, abdomen very large; had a laceration of the cervix and partial rupture of the perineum at a former labor. Was given several doses of the compound jalop powder, in the hope of relieving her. With free actions from the bowels her condition became more comfortable. Labor pains came on at three o'clock in the evening. At twelve o'clock the os had dilated very little, vertex presenting; was now given hydrate of chloral and bromide of potash. At one o'clock introduced two fingers into the os and separated them to their fullest extent, then three fingers, then four fingers and separated. Pains were strong; the head was pushing down rapidly and at ten minutes past two the child was born. The placenta was expressed without difficulty. No hemorrhage, uterus contracted well under ergot. Child affected by the chloral, but revived during the night. Mother made a good recovery.

*Case 2.*—M. M., white, aged 31 years. In fifth confinement uremic symptoms. Pains not sufficient to dilate os. Chloral hydrate and bromide of potash did not hasten labor. Head presenting. Gave chloroform; introduced hand into the vagina and dilated os with the fingers; applied forceps and delivered her of live male child in one hour from the introduction of the fingers. Placenta expressed; no hemorrhage requiring attention; ergot given. Recovery complete.

*Case 3.*—M. G., white, aged 37 years. In her seventh confinement; cervix and perineum lacerated in a former labor. She was delivered in a very filthy bed and filthier room. Pains came on at twelve o'clock on the evening of the 8th of May. Os rigid, pains strong and frequent, the waters were not discharged. Dilatation to admit two fingers, fingers separated; three fingers introduced, then four fingers, bag of waters formed but kept intact. After such manipulations at intervals, for one hour and a half, the child was delivered naturally at half past three on the evening of the 9th. Child strong and healthy. Placenta came away with little hemorrhage. Recovery complete.

*Case 4.*—R. M., white, aged 36 years. In her fourth pregnancy. Had irregular hemorrhages for about three months, oozing and passing of clots; when early in her seventh month she had a severe hemorrhage. Vertex presenting. Cervical canal and vagina had been packed with iodoform gauze by her physician. Called at three o'clock in the morning, and notwithstanding the fact that the hemorrhage had been checked, I advised the immediate emptying of the uterus. Chloroform was administered, the gauze removed, the tissues found soft. Dilated with the fingers; applied forceps and delivered; the hemorrhage was quite free, the uterus emptied at once, irrigated and then packed with iodoform gauze and ergot given. The child was alive; the mother recovered in the usual time. Time required for the manipulations forty minutes. Placenta centralis.

*Case 5.*—F. S., white, aged 31 years. In her first pregnancy. Had hemorrhage during the fifth; in the sixth month she had a very free one. She was tamponed by her physician and the bleeding had ceased when I arrived at the house. Her pulse was thready and feeble; her face showed the loss of blood, respiration, sighing and all the symptoms of collapse were present. Her condition was such that I did not think interference at that time justifiable and advised lowering the head of the bed, absolute quiet and a change of the tampons during the evening; should hemorrhage be present to dilate and deliver. All went well until one week after, when she got out of bed to attend to some household duties; the bleeding started afresh to be checked by tampons. It again started in the early morning with intense labor pains and a rapid delivery of the child. The hemorrhage was appalling, cold, ergot by the mouth and hypodermically, friction, all in turn failed to check the bleeding. Arriving about three-quarters of an hour after the delivery I packed ice in the uterus, used friction upon the hand within the uterus through the abdominal wall, irrigated with vinegar and these means failing the uterus was packed with roller bandage, no gauze being at hand. The hemorrhage was immediately stopped, but the loss of blood had been so great that she could not rally from the shock and died three hours after the delivery. The child was still-born. Placenta centralis.

Looking back now to this case, I think I should have delivered this woman at the time of my first visit and not let her run any further risk, but the outlook was so unfavorable I hesitated and the time for action passed. Should such a case again present, my course would be rapid dilatation and immediate delivery.

In irrigating these cases, we may use the solution of bichloride of mercury, carbolic acid or any other medication which individual preference may suggest; for my part I employ a solution of Tyre's antiseptic powder, which consists of borax, alum, carbolic acid, glycerin, and the active principles of thyme, mentho, gaultheria, and eucalyptus scientifically combined.

1106 P street, Washington, D. C.

# COCAINE; ITS USES IN GYNECOLOGY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY WM. H. HUMISTON, M.D.
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Having now had five years' experience in the use of cocaine in gynecological operations, I feel better prepared to eulogize its merits now than I could do two years ago, when I first brought this subject to the notice of the profession at the Washington meeting. I stated at this time that the only annoying symptom that frequently arose was the shortness of breath, and the anxiety connected with it,—this I have been able to obviate by the use of strychnia or tincture of nux vom.; one-thirtieth grain of the former, or fifteen minims of the latter, administered with one-half ounce of whisky thirty minutes before operation.

I do the following operations with no other anæsthetic than cocaine, viz.: dilating, curetting, trachelorraphy, anterior and posterior, colporraphy, and perineorrphay. Frequently making two of these operations at one sitting. In dilating and curetting primiparæ, I resort to cocaine in preference to chloroform or ether; and the pain produced is but slight, and the convalescence is uninterrupted and rapid.

The essentials of this method are: 1. Asepsis. 2. Pure cocaine. 3. Quantity, and how used.

1. The parts to be operated upon should be thoroughly cleansed, and all instruments used *sterilized*, and especially the hypodermic syringe and needle.

2. It is essential that a reliable preparation of cocaine be used, and I rely upon Squibb's or Merck's. I prepare them in two strengths— a four and a ten per cent. solution; the former for hypodermic use, and the latter for intra-uterine injection preceding curetting. I prepare but small quantities at a time, only one drachm of each strength made from sterilized water, to which is added one drop of pure carbolic acid to prevent the solution changing or depositing flaky particles.

3. The quantity of cocaine used for each sitting is from three-fourths to two grains; where but one operation is done I use from one-half to one grain. For curetting I steady the uterus with a tenaculum, and with hypodermic syringe inject the posterior lip with two or three minims of the four per cent. solution. I then take a firm hold of the posterior lip with the bullet forceps, which is painless, and then inject as much more as near the internal os as I can. If necessary to dilate, I do so, until the intra-uterine syringe will pass to the fundus of the uterus, when I throw in eight or ten minims of a ten per cent. solution. I hold my syringe in place a minute to allow the cocaine to be retained, and anæsthetize the mucous membrane as much as possible. After waiting two minutes I proceed to thoroughly curette the whole cavity, followed with a free washing by a double catheter. A few patients complain of some pain, but not enough to desire chloroform or ether, and a great many state that it was absolutely painless. In making trachelorraphy, single or double, but one surface is injected at a time, and after one minute you can proceed to freshen the portion mapped out without any pain. I have frequently freshened the whole surface of a double laceration without the patient experiencing the slightest pain. The average amount of the four per cent. solution used in a double operation is twenty minims. I use a very fine hypodermic needle, and do not inject deeply unless I wish to cut out a large V-shaped portion of the cervix.

4. In colporraphy I inject a four per cent. solution in a circle surrounding the portion of the mucous membrane to be removed, and this anæsthetizes the whole portion, and denudation can be done with but little bleeding, and no pain—amount used twenty to thirty minims. In perineorraphy I generally make the split flap operation. I make but one puncture with the hypodermic needle, and this in the median line at the junction of the skin and mucous membrane at the vulval opening—inject gradually to a depth of one inch, then carefully withdraw the needle until you are near the point of entrance, when you change the direction of the needle and inject the right vulval edge to the heighth you wish to restore the perineum, and in a like manner the left. The scar will readily show from what point the rupture took place and it is best to restore to the full extent. Within two minutes after thus injecting twenty to thirty minims of a four per cent. solution, you can proceed to operate without pain. Before inserting the sutures it is well to inject a few minims more along the cutaneous border.

I will now briefly refer to a few cases:

Mrs. H., age 34, married at 19 years of age, menses regular, not painful; has had four children, youngest four years old. Had inflammatory rheumatism when eleven years old, and again three years ago; attacks were severe, but does not think had any heart complications until last attack. Patient believes that injuries to cervix and perineum occurred at birth of last child, as she had a prolonged getting up, and has not been well since.

When I was called to this patient I found her in bed, very weak and anemic, pulse 118, temperature 100, with frequent attacks of sinking spells, cold hands and feet, and extremely nervous. On examination found heart enlarged, and murmurs at both apex and base of heart. On vaginal examination found perineum torn to sphincter ani, uterus retroverted, enlarged and tender, cervix lacerated, swollen, eroded. Ovaries enlarged and very sensitive to pressure. This case not only required local treatment, but operative measure. I felt chloroform and ether was out of the question as the heart was so diseased.

After a few weeks of local treatment with general systemic measures, she was so far improved that I was able to move her to my private hospital for operation. One-half hour before curetting I gave her fifteen minims tincture of nux vomica in one half ounce of whisky. I made use of the cocaine as described above, using one grain together of the four and ten per cent. solution; I proceeded to curette, and to my surprise she had no shortness of breath, or anxiety, and no pain. The pulse was less rapid, and of more force under the effect of the nux vomica and whisky.

This patient was in such reduced condition from her long illness and menorrhagia, that her power of endurance or ability to suffer pain was *nil*, and she was morally certain before the operation that she could not endure it without ether or chloroform, yet to my surprise she did better than any case I had before curetted.

At intervals of ten or twelve days I repaired the cervix and perineum, with the same happy effect from the cocaine. The operations were all successful, and she is now able to do light housework and be comfortable.

Believing that the administration of the nux vomica was responsible for the freedom from the anxious breathing that cocaine is so apt to produce, I have given it since to every patient operated upon, and I esteem it highly, and trust it will gain your confidence after repeated trials.

My last reference will be to a case of chronic lung trouble, that had uterine disease and required operative measures, but an eminent specialist of Pittsburgh refused to operate owing to the serious condition of her lungs, precluding the administration of chloroform or ether. She was sent to my hospital, and I did curetting and trachelorraphy without the slightest pain or difficulty by the use of cocaine after the above method.

Her cough and general condition improved, and she was able to remain in this climate during the entire winter without taking cold or becoming worse. For four years her winters had been spent in Florida or Colorado.

There are no unpleasant after effects from the use of cocaine aside from a slight headache in some cases. No vomiting or shock, and convalescence is rapid.

I could multiply these cases by the score, as I am operating almost daily without having any untoward symptoms, and I desire to thoroughly impress my brother gynecologists with the desirability of cocaine as an anæsthetic in all minor gynecological operations.

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# A SUCCESSFUL CASE OF CÆSAREAN SECTION.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY GILES S. MITCHELL, A.M., M.D.

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Until the last decade the Cæsarean section occupied a doubtful place between conservative and sacrificial midwifery. Pajot, the distinguished author and obstetrician, writing in 1875 concerning Cæsarean section makes the following statement: "This operation has cost the lives of all the unhappy, ignorant women who have undergone it in Paris since the beginning of this century." And he adds, "it is still practiced." Even Robert Barnes, whose name is a household word with the medical profession, in the last edition of his work on Obstetric Operations, uses the following language in speaking of it: "It is resorted to with a feeling akin to despair for the fate of the mother, which is scarcely tempered by the hope of rescuing the child. It is looked upon by the great majority of obstetricians as the last desperate resource, as the most forcible example of that kind of surgery which John Hunter regarded as the reproach of surgeons, being a confession that their art was baffled." These quotations are ample apology for the brief recital of a successful case:

Patient, Mrs. H., Irish, aged 24, primipara, rather delicate and of a highly nervous temperament. Saw her for the first time late in the afternoon of April 24, 1893. She informed me that she had reached the end of her gestation, and from the pain she was having thought she was in labor. Date of last menstruation, July 10, 1892. On making digital examination I recognized a hard solid tumor extending from above the sacral promontory, down and filling up the major portion of the sacral concavity. Pelvic diameters of outlet normal. Conjugate of middle strait about 2½ inches, conjugate of brim 1½ inches. All of the uterus was above the pelvic inlet and the os undilated was pushed forward and felt above the pubic symphysis. Recognizing that a formidable surgical operation would be necessary in order to accomplish delivery, and in view of bad hygienic surroundings, I requested that she go to a hospital. This she absolutely refused to do. The pains being feeble and the os not dilated, I concluded to do nothing until morning, save irrigate the vagina with a bichloride solution 1:4000, and wash out the lower bowel with warm water and glycerine. Early on the morning of the 15th dilatation was sufficiently advanced to readily admit the index finger. Vertex presentation was diagnosed. The position being the right occipito anterior. The pains being now severe and the amniotic sac having ruptured, it was deemed advisable to wait no longer. So after consultation with Dr. Chas. A. L. Reed, the child being alive, it was deemed wisest, best and safest to deliver by means of the Cæsarean section. Promptly at 8:00 A. M., April 15, about fourteen hours from the time I first saw her, I began the operation, assisted by Dr. Chas. A. L. Reed, and in the presence of Dr. Robert B. Mitchell and Dr. Edgar Reed and the nurse, Miss Schwank. Chloroform was anæsthetic employed. Patient's temperature was 101°, pulse 114. The abdominal incision was eight inches in length, two-thirds of it being above the umbilicus. There was very little bleeding from the abdominal parietes. As soon as the uterus was exposed a loop of rubber tubing was slipped over the fundus and brought down to the neck. The uterus was then quickly opened, the incision being about six inches in length, through the fundal and middle zones. Delivery was speedily accomplished by means of the feet. The child, a male weighing 7½ pounds, was asphyxiated, but Dr. Reed soon succeeded in resuscitating it. Only eight minutes elapsed from the beginning of the operation until the child was born. There was considerable bleeding from the uterine sinuses, but it was readily controlled by tightening the elastic ligature around the cervix. The placenta was attached high up posteriorly, and was removed shortly after the child without difficulty. After waiting a short time for the uterus to contract, the wound in it was closed by means of a Lembert-Czerny continuous silk suture through the peritoneum only. The equivalent of thirteen interrupted sutures was passed. The abdominal walls were then carefully united by means of eight interrupted silkworm gut sutures. Neither the uterus nor the abdominal cavity were washed out, nor was there a drainage tube placed in the cervix. The external dressing consisted of iodoform gauze and cotton held in place by strips of rubber adhesive plaster. The stitches were removed on the seventh day, union having taken place by first intention along the entire wound. Not a suspicion of pus was manifest at any point. On the tenth day the patient was, from a surgical standpoint, well. The following is the record kept by the nurse:

April 15, 8:00 P. M. Resting quietly. Vomited once two ounces clear fluid. Lochia normal. Passed 8 ounces urine. Has taken nothing, save small quantities of hot water.

April 16. Patient passed a comfortable night. Lochia normal. Took during the day a tablespoonful of chicken consommé every two hours. Morning temperature 99.6°, pulse 100; evening temperature 100.2°, pulse 120.

April 17. Patient slept several hours; complained of pain in lower part of bowels. Lochia normal. Morning temperature 101°, pulse 100. Took chicken consumé. Passed normal quantity of urine.

April 18. Rested well; slept several hours. Lochia and urine normal. Morning temperature 100.8°, pulse 84; evening temperature 102°, pulse 90. Had small stool.

carminative and stimulant qualities from spice or alcohol which may be present, the rejoinder would be that there can be no objection to the administration of such adjuvants if the case require them, but if a digestive ferment be demanded, and pancreatic extract be desired, then it is incumbent upon the prescriber to see that he gets a physiologically active preparation, and that he does not allow himself to be put off simply by a name.

As now furnished in the form of an impalpable, dry powder, which possesses, and retains permanently a high digestive equivalent, it certainly would seem that the requirements of clinical medicine of pharmacy, in this direction, are fully satisfied and that other preparations are unnecessary. Glycerin is the only solvent which enables us to administer or apply the digestive ferments in a liquid form without loss of activity or liability to precipitation. Since the acid media in which pepsin is alone active renders pancreatic ferments inert, and the neutral or alkaline media required by the latter precipitates the former, it would certainly appear illogical and unphysiological to administer pharmaceutical compounds of these two classes of ferments. In such cases, one or the other is useless and wasted. In order to obtain the best effect from the pancreatic extract, it is given in combination with sodium bicarbonate, usually in the form of compressed tablet, or in a gelatin capsule. The glycerin solution has special advantages for topical applications in diphtheria and for surgical dressings.

The proper time for the administration of pancreatic extract or trypsin, is just before a meal or about two hours afterwards; just before eating because it may pass into the intestine before the acid gastric juice has commenced to be secreted, or later, when gastric digestion is complete and the chyme is passing into the duodenum and intestinal digestion is in progress. In cases of apepsia, or achlorhydria, and in conditions of fever where gastric digestion is suspended, the pancreatic preparation may be given with the food. The dose of the active preparation now furnished under the name of pancreatic extract is from two to five grains, usually combined with twice as much or even more of bicarbonate of sodium. Some reliable forms of combination, such as that with ox gall, are also to be obtained from the leading manufacturers of preparations of the digestive ferments. Since alcohol and some metallic salts precipitate the digestive principles from their solutions, it is advisable not to administer such remedies coincidently with the ferments; especially is the old form of wines or elixirs of these ferments objectionable. The physiological fact that digestion differs from fermentation, is illustrated by the action of creosote, which stops fermentation but does not interrupt the process of digestion or the action of the digestive ferments. Creosote, or guaiacol, therefore, is a useful adjuvant to the digestive ferments where there is an excess of flatulence due to acetous fermentation, or in so-called "windy dyspepsia." Although the dosage above mentioned is the quantity ordinarily prescribed, much larger doses may be given if thought desirable, since, unlike many of our other remedies, the digestive ferments have no toxic action and in excess have not been known to cause irritation. There is a theoretical danger from prolonged administration, that the normal secreting glandular function may be superseded and artificial digestion become a permanent necessity. Unfortunately, in many of the cases in which a resort to the use of pancreatic extract is required, the functional activity of the glandular apparatus has already been more or less permanently impaired, and in such cases the systematic administration of the digestive ferments affords the only means of living in comparative comfort, and of relieving them of their thralldom to the demon, dyspepsia. Where there is emaciation due to impaired assimilation of fats, pancreatic extract should be given in sufficient doses, guarded by sodium bicarbonate, to bring about a disappearance of fat from the stools, and it should be continued until this symptom disappears.

Clinically speaking, the pancreatic ferments, or trypsin (which is a purified pancreatic extract), have been found especially useful in the digestion of milk proteids, trypsin possessing a marked power of digesting casein. This has been utilized in predigesting or peptonizing the milk for infants and invalids with delicate stomachs. As this process softens the curd, and approximates cow's milk more closely to mother's milk, this expedient has proved (in connection with sterilization of the food), of inestimable advantage to bottle fed babies and badly nourished neurasthenic patients of larger growth. The process has been very much simplified for domestic use by the manufacturers providing the proper quantity of extract and soda, in hermetically sealed tubes, each containing sufficient ferment to peptonize a given quantity of milk. The only manipulation required is to warm the milk to a blood heat, mix with it the contents of one of the tubes; a few minutes' contact only are required to sufficiently digest the casein, when the further digestion is at once arrested by bringing the milk to the boiling point, which destroys the ferment. In the case of infants, the powder may be added to the bottle just before feeding, or administered separately, dissolved in water, immediately afterward. For making "humanized" milk from cow's milk, a special peptogenic milk powder has been prepared by the manufacturers, which contains sugar of milk and other principles required to make cow's milk a proper substitute for breast milk in the diet of infancy.

Some acceptable articles of nutrition for the sick may be made with the aid of pancreatic extract. The diastasic action may be utilized by adding the extract to various starchy foods, such as gruel; always being careful not to impair the digestive activity by excessive heat (over 130° being the limit). The late Dr. N. A. Randolph, in an article entitled "The Dietetic Factor in the Treatment of Angina Pectoris," after commenting upon a case in which a paroxysm was brought on by slight gastric irritation, with inability to retain even the lightest and simplest foods, reported that he had successfully met the emergency by the use of pancreatic extract. He prepared pancreatized stewed oysters and milk toast, and suggested that this expedient migh be extended to other articles of diet with much advantage in similar cases of gastric hyperæsthesia, so as to enlarge the rather scanty bill of fare of such patients.

The very interesting and possibly useful discovery was made by Randolph, while studying the absorption of remedial agents by the skin, that the resistance of the epiderm and the more important obstacle afforded by the sebaceous secretion might be overcome by the application of a solution of pancreatic extract. This is best given in his own words: "A very simple and efficacious method which we have devised for removing these obstacles consists in the addition of a proteolytic ferment to the solution of the drug used. Thus trypsin (prepared by Kuhne's method), is added to a strong solution of (*e.g.*) morphia. Absorbent cotton is saturated with the mixture, placed upon the skin and covered with waterproof plaster. The natural warmth of the part induces activity of the ferment and the consequent solution of the epiderm, narcosis supervening in from one to two hours. This method, when applied under the supervision of the physician, affords one advantage over ordinary modes of medication, namely: that when the desired therapeutic effect is obtained, the further absorption of the drug may be prevented by at once removing the external application."[1] It does not appear that this ingenious suggestion has as yet been actually employed in clinical therapeuticss but it would seem of great advantage in local neuralgia ; and painful tumors, even though it be not necessary to push to its full physiological effectthe drug with which it is associated. Thus in the case of morphine or codeine, the anodyne action might be thus obtained at the point where it is most needed, without the narcotic or secondary effects from the usual or hypodermic method of administration.

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[1] Notes from the Physiological Laboratory of the University of Pennsylvania. Edited by N. A. Randolph and Samuel G. Dixon. Phila 1885.

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SATURDAY, SEPTEMBER 2, 1893.

## THE AMERICAN MEDICAL ASSOCIATION.

An extract from the valedictory of the former editor of this JOURNAL has had a wide circulation in certain not over-friendly publications. The valedictory mentioned contained certain well meant but erroneous statements, which, when published by themselves were calculated to damage the JOURNAL in its business interests and the ASSOCIATION. If the ASSOCIATION critics had reproduced the *whole* article, we would not now need to explain. The article was written before the returns were received from the Milwaukee meeting.

At that meeting there was an increase in membership of 273, and in the last month, the membership by application has brought the increase up to 300.

There has never been a time when the JOURNAL had so large a bona fide mail list, and there has never been a moment when there was not money in the treasury; more than sufficient to meet any possible contingency. There have been added eight pages of reading matter, and the outlook for the publication has never been brighter than at present.

We have maintained silence on this subject up to this time, as we dislike to make public mention of the business affairs of this office, but as longer silence might be misconstrued, both within and without the ASSOCIATION, we have thought proper to state the facts.

The ASSOCIATION door is always open for new members by application, and they are welcomed because we strengthen the ASSOCIATION with every new addition, and so far as the JOURNAL may be able, it will continue to urge every member of the profession to lose no time in increasing the growing membership; but the talk about the decadence of the ASSOCIATION is, in the light of the facts, as silly as it is malicious.

Ten thousand new members would mean a great deal to the medical profession of this country, and there is no visible reason why all do not march under the ASSOCIATION banner, except the constant tendency to split up into hundreds of small coteries. If there are errors in the form of the organization, such can be corrected at the will of the majority, and the practice of staying outside the fold and growling only pleases those who wish to see the organization belittled. The AMERICAN MEDICAL ASSOCIATION will not decay until the profession itself shall lose its reason and its patriotic instincts.

The logical force of the position held by those who uphold organization, is irresistible, and the tendency of the time, in all countries, is for better organization. A large body is more powerful to effect the accomplishment of the desires of the medical profession than a small one, and at this stage of our political history the only forces that are effective in moving legislatures, are those backed by numbers.

The scientific aspect of the ASSOCIATION has markedly improved since the creation of the Business committees of the Sections, and a glance at the papers published this year show a much higher average rank than heretofore. There were always "star" papers, but there were a number of mediocre papers. At the present time, the ASSOCIATION may take just pride in the high professional value of the papers sent to the JOURNAL from the Sections.

The JOURNAL itself has greatly benefited by the renewed vigor of the ASSOCIATION, and it can be made the equal of any medical journal published whenever the membership of the ASSOCIATION rises to equality in numbers with any other, and that membership will certainly come in time. The numbers are now increasing, but more slowly than befits this active, restless age. A little more vigorous effort to secure members by application will accomplish the desired result.

## PERITONITIS IN THE MALE FROM GONORRHŒAL INFECTION.

The profession has already become quite familiar with the disastrous results of gonorrhœa in the female and its varied pathologic possibilities as affecting the pelvic peritoneum, and secondarily the general expanse of the peritoneum. The possibility of a similar infection of the peritoneum in the male has received very little attention, in spite of the fact that JOHN HUNTER many years ago called attention to peritonitis following in the train of epididymitis of gonorrhœal origin.[1] In HUNTER's opinion testicular inflammations of all sorts are generally accompanied by pain in the loins, and a sensation of weakness in the lumbar region and pelvis. The intestinal tract sympathizes ordinarily with most testicular diseases, said sympathy manifesting itself either by colic pains, or abnormal sensation located in the stomach and bowels. Nausea and vomiting are frequent symptoms.

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[1] Works of Hunter, edition 1843, volume ii, p. 219.

As a consequence of this gastro-intestinal disturbance the digestive function is deranged, and very painful, gaseous distension of the abdomen is likely to occur. There exists, according to HUNTER, a very complex series of sympathetic possibilities. The same is true of any irritation extending throughout the genito-urinary tract. Urethral disturbances are followed or attended by pain and irritation of the spermatic cord, the back, gastro-intestinal tract, and through these parts various disturbances of almost every other part of the body may occur. HUNTER further states his belief that this irritation may be communicated to the peritoneum through the canal of the vas deferens. The latter opinion he attempts to substantiate by a case in which pain and swelling of the right inguinal region immediately above Poupart's ligament occurred, with the phenomena of chills and fever following a gonorrhœa. On palpation, induration and pain were found to exist in this region, the pain extending over the entire abdomen. To HUNTER's mind these symptoms prove that the right vas deferens was affected by an inflammation which involved the abdominal and pelvic peritoneum. We, of modern days, with our knowledge of inflammation about the caput coli, find no difficulty in combating this view of HUNTER's as far as this particular case is concerned.

A very interesting article upon gonorrhœal peritonitis in the male by ZEISSL appears in the *Annales des Maladies des Organes Genito-Urinaires*, July 1893. It contains a complete bibliography of this subject up to date. Among the authors quoted in the article are SWEDIAUR, KERN, RICORD, FOURNIER, GODARD, VIDAL DE CASSIS, PETER, GUYON, BERKLEY HILL, TARNOWSKY, WENDELIN, GOSSELIN, ROUGON and HOROWITZ. Many of the cases quoted by ZEISSL are decidedly defective, particularly in the direction of the possibility of confusion with "right ileac disease" i. e., appendicitis and its consequences. A case in point is one of ROUGON's, which is as follows:[2]

An officer of artillery, at the age of 35 years, was taken in a dying condition to the Hôpital Fort de France (Martinique). The skin was cold and moist, face drawn and anxious, pulse small, frequent and almost threadlike. There was violent headache; the tongue very red, covered with sordes; extreme thirst was complained of. Patient was vomiting material colored with bile; abdomen was tender and very painful, principally in the right iliac fossa. Constipation had existed for several days. Urine had been scanty and high colored. Along the spermatic cord could be seen the relics of leech bites. Epididymitis of the right side, accompanied by acute hydrocele existed, with a history of gonorrhœa of twenty days duration, the secretion of which had suddenly ceased after the 4th of March, its cessation being followed by testicular inflammation. The severe pain in the abdomen and other grave symptoms had already lasted for three days. Patient died the same day he was taken to the hospital.

Necropsy showed an abdomen distended with gas, scrotum bluish, with ecchymoses in the sub-peritoneal cellular tissue of the right side. The peritoneum, principally in the right iliac fossa, was covered with inflammatory exudate. About 300 grams of sero-purulent liquid were found in the right iliac fossa and the lower pelvis. The vessels of the serous envelope of the stomach, small and large intestine and principally the ascending colon, were highly injected. The liver was greatly distended with blood. The right epididymis was large, red and ecchymosed, and on section was found to contain four small purulent foci. The right spermatic cord was thickened, and was found to contain in its coverings a quantity of exudate. The prostate, seminal vesicles and ureter were not examined.

It is difficult to understand why the author should present this case in substantiation of the occurrence of gonorrhœal peritonitis; a case was published by ROUGON in 1876, the probability of the peritonitis following appendicitis and occurring as an accidental complication of epididymitis at once suggests itself. To the average American author, therefore, such a case would be absolutely worthless. NEUMANN, JULLIEN, FINGER, MILTON and others mention peritonitis as a result of possible gonorrhœal infection. MILTON, however, with his large experience, has never seen a case of the kind, neither apparently have JULLIEN and NEUMANN.

HOROWITZ publishes two cases of peritonitis following epididymitis of the left side accompanied by prostatitis, inflammation of the seminal vesicles and considerable tumefaction of the left spermatic cord. Both of these cases recovered.[3]

ZEISSL describes three cases of his own which he considers to have been peritonitis from gonorrhœal infection.[4] His first case may be taken as a type, and it is worthy of quotation.

F. X., 34 years of age, was attacked by urethritis about the 14th of November, 1879. He consulted ZEISSL for the first time December 1, 1879. At that time there existed a temperature of 38.9 C.; pulse 106; tongue was dry; patient complained of vomiting from time to time matter of a bilious nature. The abdomen was slightly tympanitic and swollen, and especially sensitive to pressure in the right ileo-cæcal region. According to the story of the patient the symptoms developed on the night of November 30, 1879, after having already felt an acute pain in this location, and he had noted for a long time a swelling. There had been no constipation for several days, and no discharge of gas. The ensemble of symptoms pointed toward strangulated inguinal hernia. A careful examination of the patient found the scrotum empty in the right side, with a painful tumor in the right inguinal canal. This was determined to be the testis. There was evidently in this case an inflammation of the right epididymis in a unilateral cryptorchid. Under frictions of mercurial ointment and the application of compresses of cold water, associated with hypodermic injections of morphine for the pain, the symptoms disappeared very speedily. On the 4th of December constipation ceased spontaneously, and after complete disappearance of the epididymitis, treatment of the urethritis was commenced.

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[2] L' Union Medicale, Vol. xi, p. 651.

[3] Weiner Med. Woch., 1892.

[4] An. des mal. gen.-ur., July, 1893.

Inasmuch as it has been shown that there is an intimate relation between the lymphatic supply of the genito-urinary tract and peritoneum, we are willing to accept the possibility of gonorrhœal peritonitis in the male. We do not believe, however, that most of the cases cited by Zeissl afford substantial evidence in favor of this pathological possibility. The local and constitutional disturbance incidental to strangulation of the inflamed spermatic cord or retained testis by the rigid and unyielding structures about it, are what we naturally expect to find in strangulation of a sensitive issue, in whatever location it may be found. We have noted a similar group of symptoms to those outlined in Zeissl's case in a number of instances of pididymitis in which there was a predominance of nflammation of the spermatic cord. Strangulation of tissues so intimately associated with the sympahetic ganglia, as are the spermatic cord and testes, particularly in the presence of acute inflammation nd swelling, might be expected to be followed by more or less reflex irritation of the abdominal organs, eneral prostration, fever and disturbed heart action. imple cases of epididymitis are very frequently ttended by alarming manifestations of this charcter. Reflex inhibition of the intestinal muscle ith resulting tympany are naturally to be expected in some of these cases. In some instances the onset of the difficulty is attended by profound manifestaons of shock. Such cases as that of Zeissl, folwed by recovery, are seemingly very weak evidence support of the possibility of gonorrhœal peritonis in the male. Fatal cases showing general perinitis are equally valueless, unless it can be proven yond peradventure of a doubt that there is no her cause for the peritonitis. Gonorrhœa and its quelæ are so frequent that it would be unfortunate, deed, if the general practitioner were led to believe at gonorrhœal peritonitis deserved great consideron in the matter of differential diagnosis. The ssibility of its occurrence should be accepted, but ould not weigh very heavily in the balance in ses in which symptoms exist that are strongly indicative of appendicitis or general peritonitis from unknown but probably surgical remediable causes. It is hardly probable that such simple measures as were successful in the case quoted by Zeissl could have very much effect after an acute peritonitis once begins. It should also be remembered that the peritoneum is not particularly susceptible to infection by the gonococcus per se; when it does occur in the course of gonorrhœa, even in the female, it should be attributed to a mixed infection, and not to the gonococcus.

## CHOLERA.

In Russia, returns for the last week show a decided increase and its spread to localities heretofore uninfected. There was reported 4,329 new cases, and 1,692 deaths in twenty-two provinces. Turkey has quarantined vessels coming from nearly all the ports on the Black sea. The senate of Hamburg has prohibited the admission of clothes or dirty linen from Russia. Since August 15, there were eleven cases reported with eight deaths, in Germany. It is hinted that the river Spree may be infected. Suspicious cases were reported at Neuss, Halle, Duisburg, Sigmargingen, and a case of cholera was discovered in the Rhine boat *Flora*, at Rudesheim, opposite Bingen. There are now reported seventy districts of Hungary and seventy-two districts of Galicia infected with cholera, a decided increase over last week. The first case is also reported in Vienna. There seems to be a decrease at Naples, with a decided increase at Palermo, and denial that there is cholera in Rome. Roumania reports an increase. The disease seems to be increasing at Smyrna.

We have not yet learned the result of the distribution of the returning pilgrims that were quarantined at El Torr, save that eighteen deaths occurred on a French steamer that transported some of them to their homes. It is announced that the steamer *Carlos* arrived at Rio Janeiro on the 28th inst. from Grand Island, Canales, and that 103 persons on board died from cholera on the way over. The ship was refused permission to land or even put its crew and passengers in quarantine, and was escorted out of the harbor by the warship *Republica*, and ordered not to land at any Brazilian port. No official report has been received from France, but cases of cholera occurred at Montpelier, and a suspicious disease is reported at Nantes, which is undoubtedly cholera. One death from cholera is reported at Hull, England, a girl thirteen years of age.

In Holland and Belgium there is a slight increase, not alone in the cities heretofore reported, but also in the number of places infected. The lower part of the river Linge has been declared infected. We shall watch with much interest the efforts made by the health authorities of Germany, Belgium and Holland to suppress and to prevent the spread of cholera. There are undoubtedly at this time more infected cholera points in Europe, than at any one time during the history of the various pandemics that have afflicted that country. These have generally lasted three years, but owing to the care taken, and the changes that have taken place in communication, it may be brought to an end this year. There is undoubtedly more cholera in Europe now, than is reported. So long as the present conditions obtain, the United States is not safe from invasion, and it is a question whether the time has not come when immigration should be suspended from all infected countries.

## ARMY MEDICAL EXAMINING BOARD.

In our issue of July 29 we called attention to a circular of information for young medical men desirous of entering the medical department of the Army, and stated that a Board of Examiners would probably be convened in Washington, D. C. The Board has been directed to meet on September 11. Formerly these examining boards were convened in New York city; but as the professors of the new Army Medical School form a suitable personnel for them, it is likely that Washington will hereafter be their place of meeting. The officers detailed for duty on the Board now called into existence are: Colonel CHARLES ALDEN, president of the faculty; Lieut.-Colonel W. H. FORWOOD, professor of military surgery; Major CHARLES SMART, associate professor of military hygiene and director of the chemical laboratory; Captain W. REED, professor of clinical and sanitary microscopy, and Captain J. C. MERRILL, in charge of the property division of the Surgeon General's office. Although the Board meets in September it is not likely that its sessions for examination will be held until Monday, October 2. Some preliminary arrangements will have to be made, including the settlement of the details of a method of relieving candidates who would fail on account of physical or other easily discovered disqualifications from the loss of time, money and nervous energy involved in a needless journey to Washington. The post surgeon of the military station nearest to the home of the aspirant for position, will probably be called upon to examine into certain preliminary but essential points, and to submit his report thereon for the consideration of the Board. There are at present six vacancies, but the examiners will probably provide passed candidates for the prospective vacancies of the next twelve months.

## LIABILITY FOR THE SUPPORT AND CARE OF THE INSANE.

States are wont to make some provisions for the care of their insane. They commonly levy special taxes for this purpose. Nebraska did this, but also went farther and attempted to authorize a recovery, from the persons legally bound for the support of an insane person, of the sum paid by the county for the care and treatment of such insane person at the insane hospital of the State, when such care and treatment were furnished upon the finding of the proper commissioners of the county. This last enactment the Supreme Court of that State has declared unconstitutional and void, in a decision rendered in the case of BALDWIN v. Douglas county, on June 29, 1893, and just reported (55 *Northwestern Reporter*, 875). The court said that it had previously held that the relation of brother or sister to the afflicted did not justify this special exaction; and it had again adjudged the same freedom from liability as to the children of the insane. In this case, however, it was a husband that was sought to be charged, and it was insisted that he should be, because the husband is legally bound for the maintenance and care of his wife. But the court said that it knew of no principle of equity or justice that would imply a contract by the husband to answer for the treatment of his wife, furnished by the State in the interest of the general public; that the public thus benefited should defray all of the expenses incurred for its protection. Moreover, the husband had already paid his proportion for the maintenance of the insane hospital. This was by a direct tax upon his property. If he were required to pay for the treatment of his wife, such payment would be just as much a compulsory contribution to the maintenance of the insane hospital as was the other. It would be, in fact, another form of taxation for the same purpose. The right to levy taxes can only be justified as being necessary for the performance of its functions by the State. No tax can be legally levied for any purposes foreign to those functions, and even that far taxation is tolerated only from the necessities of the case. The collection of unnecessary revenues by the State is not taxation. It is robbery. The husband, here, having already paid his full proportion towards the maintenance of the insane hospital; more than that the authorities could not constitutionally exact.

## HOSPITAL PHYSICIANS' ORGANIZATION.

The attending surgeons and physicians of Philadelphia have organized an association with the express object of extending courtesies to visiting physicians. The secretary of the association, DR. H. H. WHARTON, keeps a roster of clinical lectures and demonstrations, and also a list of operations in prospect. In this way every visitor may learn, without delay, of operations in which he may be especially interested and the appointments of men whom he particularly desires to meet. On the other hand, the members of the association are promptly informed of the presence of distinguished visitors in the city, so that proper attention may be given to them. Similar organizations should be in operation in all our medical centers.

### TREATMENT OF CHOLERA AT THE NEW YORK QUARANTINE IN 1893.

*Dr. Byron, who was prominent in* 1892 in the quarantine service of New York harbor, was in charge of the cases recently brought over by the S. S. *Karamania*. He has tried several plans of treatment, but his chief reliance is in the use of the irrigation method that seemed to work so well last year. The general facts with regard to the experiences in 1892 may be read in a leading article in the issue of this Journal for May 20.

### MEETING OF THE BOARD OF TRUSTEES.

The Board of Trustees of the American Medical Association will hold a session at the Arlington Hotel, Washington, D. C., on Monday, September 4, at 4 p. m. John H. Rauch, Secretary.

### SPECIAL TRAIN OF THE JOURNAL.

The special train of the Journal of the Association for the Pan-American Medical Congress will leave Chicago at 8 a. m. Sept. 3, from the new Illinois Central depot, 12th street and Park Row. Buy your tickets over the "Big 4" at the excursion rate. The railroad company promises that the accommodations of this train will be the best they can furnish.

Notice.—Gentlemen having business with the Journal during the meeting of the Congress, will find the editor at the Arlington Hotel.

The President's Address will appear in full in the next issue of the Journal.

## DOMESTIC CORRESPONDENCE.

### The Epidemic of Suicide.

*To the Editor:*—Epidemics of suicide are reported from London, Paris, Chicago and other large cities. On one day within the past week eight cases of attempted suicide with six fatal results occurred in Chicago.

Can we account for these melancholy facts, and furnish any promising remedy? It won't do to say that all these people are crazy. Some of them are far above the average in intelligence and thrift, have made deliberate preparations, and have acted and written with that calm contemplation and philosophical reasoning that discredit the theory of insanity.

Was Socrates insane? He courted death with utter indifference. Was Demosthenes insane when he preferred death to defeat? The past few days have furnished numerous instances in which insanity will not satisfactorily account for suicide.

The stringency in the money market will account for a certain proportion of suicidal deaths in the present epidemic, but not for such epidemics when times are not hard. Then eliminating such cases as are attributable to trouble and insanity, how shall we account for epidemics of suicide, and what is the remedy?

When do these epidemics usually occur? In hot weather—July and August. But the heat of summer is not of itself necessarily depressing to a healthy nervous system. Otherwise why do not the people of the torrid zone exterminate themselves? But heat is favorable to the operation of a certain poison in the blood that produces, when in excess, contraction of the smaller arteries and capillary vessels all over the body, producing the cold surface and extremities, increased tension of pulse, slowing of the heart, headache, depression and irritability of temper. This same poison produces the pains of rheumatism, gout, angina pectoris, sick headache, paroxysms of nervous coryza (hay fever), and a long train of other symptoms.

The poison that has such a host of distressing symptoms charged against its action on the brain, the spinal cord or the solar plexus of nerves is uric acid.

The successful treatment for combating the effects of this poison is threefold: 1, palliative by immediate relief; 2, curative by elimination; 3, preventive by proper diet and active exercise.

1. When a person is suffering from mental depression, irritability of temper, headache, etc., due to the presence of uric acid in the blood, the first thing to do is to precipitate this acid by administering a dose or two of a mineral acid. This converts the blood into a poor solvent of uric acid. When the blood is the most alkaline, as it is in the early morning hours, it dissolves the uric acid that has been stored up in the more alkaline tissues and allows of its free circulation in the blood. It then produces its deleterious effects on the blood vessels and nervous centers. A few full doses of the mineral acids will free the blood of uric acid, relieve depression and irritability and produce a sense of satisfaction and well-being that is incompatible with the idea of self destruction.

2. After the immediate poisonous effects of uric acid have been overcome, remedies must be given to eliminate it from the system. This is best accomplished by salicylate of sodium in moderate doses, continued for a considerable time according to the individual indications. Five or ten grains taken every night for a few weeks or months may carry out of the system the uric acid that has been stored up for months or years as a result of improper diet and indigestion or faulty action of the kidneys.

3. Diet and systematic exercise will do the rest—prevent a return of the trouble. The proper diet for the uric acid diathesis consists of farinaceous foods, fruits, milk and fats. Meats, sweets, wine and beer produce lithemia and must be avoided. Fish and eggs may be allowed occasionally. Exercise sufficiently active to produce free perspiration should be taken systematically.

I believe that many cases of suffering and despondency with suicidal tendencies that come under our observation can be successfully treated on this plan.

S. S. Bishop.

### The Illinois State Board of Health.

The Illinois State Board of Health has issued the following circular:

Springfield, Aug. 23, 1893.

*Dear Doctor:*—The Illinois State Board of Health is revising its Report on Medical Colleges and Medical Education, and is desirous of including in this edition all available information concerning every medical college in the United States, without regard to its standing, repute or school of practice.

Will you kindly furnish the Secretary, at your early con-

venience, a list of the medical colleges in your State, together with the names and addresses of officers, members of faculties, or others who may be written to for detailed information. Very truly yours, J. W. Scott, M.D.,
*Secretary.*

## Cheese Poisoning Cases at Mansfield. Final Report.

Mansfield, Ohio, Aug. 14, 1893.

*To the Editor—Dear Sir:*—In compliance with my promise made some time ago to furnish you a report of the analysis of the cheese supposed to produce the numerous cases of so-called "cheese poisoning," in our city some weeks ago, I herewith submit you the same, together with the letter accompanying it from the Dairy and Food Commissioner, which is as follows:

Office of Ohio Dairy and Food Commission, State House
Dr. B. F. McNeal, Commissioner, Columbus, O.
Geo. A. Root, Cincinnati, } Assistants.
W. H. Stewart, Solon, }
Columbus, O., Aug. 12, 1893.

R. Harvey Reed, M.D., Mansfield, O.—*My Dear Doctor:*—Enclosed find report of analysis made by Prof. Kauffman of the cheese you sent to Dr. Probst. The other two chemists have not reported the results of their analysis yet, though one of them has intimated that tyrotoxicon was present.

Will let you know the results of their work when I get their report. Yours truly, F. B. McNeal.

Ohio Dairy and Food Commission—Daily Report of Chemist.

Serial No. 22. Received from Dr. F. B. McNeal. Date July 23d, 1893, marked ——:
No. —— Date July 18, 1893.
Name of dealer, Mr. Herring. Sample of cheese.
Place of business, Mansfield, Ohio.
Name of producer, Mr. Maybee,—cheese said to contain poison.
Place of business, near Mansfield, Ohio.
Sample of cheese brought by Dr. McNeal.
Taken by Dr. R. Harvey Reed, health officer.

ANALYSIS.

Water, 30.116 per cent. Fat, 34.986 per cent. Casein and milk sugar 30.614 per cent. Ash, 4.284 per cent. Fat to total solids 50 per cent. pure butter fat.

No metallic poison found; etherial washings from aqueous extract gave positive reactions for tyrotoxicon. Five minims of a solution of the etherial washings placed upon the tongue of a kitten immediately caused frothing at the mouth and in a few moments dryness of the throat, rapid breathing and retching; after about an hour violent purging. *Cheese contains tyrotoxicon.* Geo. B. Kauffman,
[Copy.] *Chemist.*

The fact that the investigation of Mr. Maybee's factory by the Food Commissioner, accompanied by an expert cheese manufacturer, has shown that tainted or spoiled milk had been used in the manufacture of the cheese, and in addition to this that two sick cows were found among the neighbors who furnished milk for the factory goes to show one of two things; either that tyrotoxicon was the result of fermentation or the result of using milk from sick cows. While the milk of the latter may not have been good, yet at the same time we do not believe that that was the cause of the tyrotoxicon, which we are inclined to think was the result of either spoiled milk in the first instance, or over fermentation in the preparation of the curd in the second instance, It is the custom of the cheese makers to allow it to stand until a certain degree of "acid," as they term it, is allowed to arise and when present makes cheese very light and spongy but which, in fact, is only the result of fermentation producing gases which penetrate the cheese during the process of pressing. This makes it light and porous, and at the same time is undoubtedly, when carried too far, the cause of fermentation followed by tyrotoxicon, or possibly, in certain cases, other poisonous compounds of a similar character, which we have already referred to in our former article, which Dr. Vaughn says he has found and isolated, the result of which those who have been studying this matter well know have been published by him. At the same time it is not always reliable to depend upon the chemist's analysis alone in these cases, unless you should find tyrotoxicon or some of the other poisonous proteids and clearly demonstrate their existence by giving them to a kitten or some animal which is easily affected with such poisonous substances. When this can not be done satisfactorily a bacteriological examination should be had, and the nature and character of the germs determined in this way. It is well to make a bacteriological examination even where tyrotoxicon is present, for as Dr. Vaughn well says "the exact nature of the poison present will depend upon the kind of germs producing it."

I am very glad that Prof. Kauffman has been able to obtain tyrotoxicon in this case, as I have every reason to believe that it *does exist* in a large number of these cases of cheese poisoning, although in some instances the toxic effect may be due to other poisonous proteids.

The lesson we have learned from these cases seems to be clearly demonstrated, not only by the report of the expert who examined the factory, but by the chemical analysis that has followed,—that *over fermentation or decomposition of milk has been the prime cause of the whole trouble.* The sooner our State Boards of Health or, if necessary, the law makers of our various commonwealths, pass rules or enact laws which will prohibit cheese makers from allowing cheese to become over-fermented or to use spoiled milk for its manufacture the sooner we will find these cases of "cheese poisoning" diminishing. There is no more reason why a manufacturer of cheese should be allowed to let his cheese become fermented to such an extent as to produce poisonous compounds in order to make it light and salable, than there is for a baker to be allowed to medicate his bread or allow it to "raise" until it is sour in order to make it white, light and spongy. Very respectfully submitted,
R. Harvey Reed.

## Agnew's or Quimby's Operation?

Denver Col., August 25, 1893.

*To the Editor:*—In the last issue of the Journal I notice that in reporting the discussion upon Dr. Manley's paper on "Tarsal Amputations," Dr. Quimby is quoted as describing a modification of Pirogoff's amputation, and that other participants in the discussion are then quoted as calling this modified Pirogoff's procedure, "Quimby's operation." While it may be that the operation was original with Dr. Quimby, it was not necessarily originated by him, as it is described with brevity and clearness by Agnew in the second volume of his "Surgery." page 361, in the following words:

"Instead of sawing off the malleoli and the articular surface of the tibia, I allowed them to remain, and placed the calcaneum in the mortise between the two; the union was complete and was followed by a remarkably useful stump. In other instances I have done this and with satisfactory results."

Then follows a brief discussion of the new operation, and there is an illustration of a preparation obtained from a patient upon whom the operation had been done.

Respectfully, Wm. P. Munn.

## A Treatment of Temulentia.

*"Dum loqimur tempus fugit,"* may be somewhat freely translated,—while we are discussing their methods the empirics (quacks?) are quietly raking in the ducats. The fees exacted by the different cures range from $105 up.

Any regular physician desirous of learning the writer's method for successfully combating alcohol addiction may address, (stamp enclosed.) C. M. Fenn, A.M., M.D.

San Diego, Cal.

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## BOOK NOTICES.

**International Clinics**: A Quarterly of Clinical Lectures on Medicine, Neurology, Pediatrics, Surgery, Genito-urinary Surgery, Gynecology, Ophthalmology, Laryngology, Otology and Dermatology, by Professors and Lecturers in the Leading Medical Colleges of the United States, Great Britain and Canada. Edited by John M. Keating, M.D., LL.D., Colorado Springs, Col.; Judson Daland, M.D., Philadelphia; J. Mitchell Bruce, M.D., F.R.C.P., London, Eng. and David W. Finlay, M.D., F. R.C.P., Aberdeen, Scotland, Vol I. Third Series. 1893. Pp. 360. Philadelphia: J. B. Lippincott Company.

There are fifty contributors to this volume, twelve of whom are British subjects and two French. They present a wide range of topics—seventy-five in number. The department of medicine occupies 121 pages, neurology forty-eight, pediatrics twenty, surgery sixty-four, genito-urinary surgery sixteen, gnecology and obstetrics forty-three, ophthalmology eleven, otology and laryngology twenty, and dermatology twelve.

In order not to trespass too much on the space in our plethoric Journal, only a few notes can be culled on growing subjects that are exciting considerable discussion in medical circles.

A fair idea of the usefulness of the book as a representative of the progress in medicine, can be gained by referring to the lecture of Dr. W. H. Porter on Bright's disease. His work represents the best class of articles in this volume and he occupies ten pages with important teachings, the iconoclastic nature of which will shock the physiologists. His text is fresh and full of suggestions for rational methods of treatment and diet. On page 76 he says: "Bright's disease is not, as it used to be considered, equivalent to signing one's death warrant but, on the contrary, we can cure a large proportion of renal diseases. We must not look upon these diseases as local specific conditions belonging to the kidney alone, for all the lesions occurring in the kidney are secondary to physiological disturbances which have gone before, and our treatment should be directed not so much to the kidney as to these prior conditions."

While most books on physiology teach that glucose, albumin and proteid matters are diffused through the blood vessels, Porter claims that the albumin found in the urine is a by-product of incomplete oxidation thrown out by the epithelial cells, and that it is not filtered through the capillary blood vessels. He asserts that glucose has never been found as such in the blood, notwithstanding that it is commonly so stated in the works on physiology; but he maintains that it is produced by the renal cells, is not formed from the starches and sugar, but is a by-product resulting from incomplete oxidation. The glucose supposed to have been found in the blood by physiologists was the result of faulty tests.

The milk diet is used, together with ox bile in two or three grain doses of the purified inspissated bile three or four times a day, for its antipyretic action. He believes it is even more effective than the salicylates, which he uses to combat fermentation and heat production, and to favor heat radiation. He condemns the modern antipyretics as active poisons and powerful depressants to the cerebro-spinal centers. "One authority has been frank enough to state that he has killed patients with them."

About fifty or sixty cases of typhoid fever altogether have been treated with ox bile without a single fatal result. Dr. Zeh has treated some of the worst typhoid cases, having very high temperature and with very severe hemorrhages from the bowels, with nothing else but inspissated bile and a little nitro muriatic acid, with a well regulated diet and alcoholics when required, and not a single case has died.

Dr. W. O. Moore refers to a number of cases of exophthalmic goitre that were reported by Dr. A. M. Hamilton as having been absolutely cured by an aqueous solution of hydriotic acid in increasing doses. He classifies the disease as a purely nervous one, and does not believe there is yet any specific treatment. He presented a rare case in which the eyeball was literally dislocated through the commissure of the lids.

Dr. F. M. Crandall treats of rheumatism in children and maintains that salicylate of sodium does not fulfill all the requirements. While it relieves the subjective symptoms more promptly than any other remedy, it does not materially lessen the danger of endocardial inflammation. It does not increase the liability to cardiac involvement, although it is a cardiac depressant in large doses. He insists that although the alkaline treatment is slower, the cure is more permanent, and the danger of endocarditis less. He combines the two plans of treatment.

This book is like the previous editions and is a worthy addition to the progressive physician's library.

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**The Surgical Anatomy and Surgery of the Ear.** By Albert H. Tuttle, M.D., S.B., of Cambridge, Mass. With Twenty-eight Original Illustrations, reproduced from the writer's Drawings from Nature. Detroit: Geo. S. Davis. Paper. 1892.

Dr. Tuttle has furnished a little handbook of inestimable value to the aural specialist. It contains a brief account of what is most necessary for them to know in order to recognize the various affections of the ear and brain that require surgical operations, explanations of the various methods, together with directions for their performance.

The importance of this subject is mentioned on page 77 in the following words: "If we leave out the cases of tubercular meningitis and disease directly following and a result of trauma, comparatively few instances of suppurative inflammation of the brain or its meninges will be found associated with middle ear disease."

For the sake of brevity the author has sometimes sacrificed perspicacity. Some confusion results from the habit of using the terms drum and drum head synonymously. He advises the instillation of chloroform for killing insects in the ear, to be followed by syringing with warm water to wash the insects out. We have seen severe inflammation result from this use of chloroform by druggists. It is unnecessary, as the syringing alone does the work. If the ear is simply filled with warm water the live insect is drowned and floats to the surface.

In using the letters of reference to the illustrations it is often impossible to know to which figures they refer. The same remark might be made relative to the descriptions accompanying the excellent plates showing the various sections of the bone.

On page 45, in treating of operations for the removal of the drum head, the author misquotes Bishop, no doubt inadvertently. He says: "In 1885 Bishop reported fourteen cases of deafness operated upon by the removal of a piece of the membrana tympani without injuring the ossicles; although the patients all expressed themselves as hearing better, the writer could see no difference." Bishop said: "The operation improves hearing, and sometimes relieves distressing noises and other subjective symptoms when nothing else would."

However, the faults of this book are of minor importance. It gives the best résume of the various aural surgical operations extant, and in such a concise yet comprehensive manner as to be of the highest value for ready reference. And it merits a more suitable cover than paper.

## ASSOCIATION NEWS.

**The American Medical Association in California.**—Almost entirely through the efforts of our friend J. H. Parkinson, editor of the *Occidental Medical Times*, the National Medical Association voted to hold its next meeting in San Francisco. The society had about decided to go to Baltimore, when Dr. Parkinson in an energetic appeal carried the meeting in favor of San Francisco. Of course we are highly pleased with the result; the Association has come as near Los Angeles as we could reasonably expect this time.

The advantages of this choice are numerous. In the first place, hundreds of the leading physicians will visit California and many of them will come to the southern part of the State; their object will be to see the country, but incidentally they will learn that this is the best summer resort in America. It will be a good thing to be sized up by the doctors—we shall give them a hearty welcome; they in turn will treat us well and send us a new "one lung" brigade. Every one knows how the California Building at the World's Fair is crowded with eager, yet half doubting inquirers; now here is a chance to verify the claims made at the exhibition; let each community send a reliable doctor to spy out the land before the hosts of immigrants invade us. Another attraction for the Pacific Coast physician will be the Midwinter Fair which will probably continue until July.

In another and more favorable way this meeting will benefit the profession of California; new interest and added enthusiasm will be gained in professional work; increased knowledge and added proficiency of all participants will be great inducements for a large attendance of the physicians of our State. It might be added here that to be a member of the National, one must belong to the State Society, and to belong to the State, one must be a member of the County Association and to hold a membership in the County Society it is necessary to keep the dues paid up, which amounts in this county to two dollars a year. The moral is obvious.—*Southern California Practitioner*, August, 1893.

## SOCIETY NEWS.

**Pan-American Medical Congress**—Hotel Rates and Capacities:

Hotel Normandie—Two in room $4.00. One in room $5.00 per day. American plan. Accommodations for 100.

The Arlington—$4.00 and $5.00 per day. Accommodations for 500.

Cochran Hotel—$4.00 and $5.00 per day. Accommodations for 50 to 75.

Wormley Hotel—$4.00 per day. Accommodations for 100.

Randall Hotel—$2.50 and $3.00 per day. Accommodations for 75 to 100.

Willards and Riggs—$3.50 to $4.50 per day. Accommodations for 400 to 500.

Arno—$1.50 to $2 50 for room, European, and $3.00 to $4.00 per day, American.

Shoreham—$2.00 to $3.00 for room, European. $4.00 to $5.00 American. Accommodations for 200.

National Hotel.—$2.50 to $4.00 per day.

Ebbitt House—$3.00, $3.50 and $4.00. *No extra charge for* alcove parlors.

**The** Dominion Medical Association meets in London, Ontario September 20 and 21.

## NECROLOGY.

**Dr. Norris M. Carter** of Brooklyn, died at his home on the 11th of August, from an affection of the heart, that had been of some months' duration. He was 52 years old, a native of the northern part of Ireland. He came to New York in early youth and received his medical education at the Albany Medical College, graduating in the class of 1859. During the war, he served as contract-surgeon. He made his home in Brooklyn about fifteen years ago, and rapidly acquired fame and position in one of the best sections of that city. He was a manly man, with genial aspect and commanding bearing. His judgment was sound, though not rapid, and his convictions firm and even frankly expressed. His physique and mental endowments, both, seemed to conspire to give to Dr. Carter the promise of a long and satisfactory career in his profession, but fate had appointed for him to fall while yet in the prime of his powers.

**Death of an Eminent Medical Missionary.**—The London *Christian* contains the following tribute to an American missionary to China, the Rev. Edward P. Thwing, M.D., formerly of Brooklyn, New York. He was probably the pioneer worker in the far east, who had set for himself the task of showing how the insane should be treated. "Dr. and Rev. Edward Payson Thwing died at Canton, China, on May 9. He was born at Ware, Mass., on August 25, 1830, and graduated from Harvard University in 1855, and from Andover Theological Seminary in 1858. He preached in Portland, Me., Quincy, Mass., and in the Church of the Covenant, Brooklyn. A few years ago he took a medical degree at the Long Island College Hospital. For several years he preached during the summers in London, and lectured frequently in New York, Brooklyn, and other places. He was a frequent contributor to the magazines. He visited China two years ago, and became impressed with the need of hospitals and asylums there, and went to that country again last year. At the time of his death he was in charge of the building of an asylum. One of his sons is a medical missionary in Alaska, another is a medical missionary in China, and a third lives in Brooklyn. There are three daughters in the family."

**Dr. Courtney J. Clark** died at Jacksonville, Ala., August 18. Dr. Clark was born in Laurens district, South Carolina, October 27, 1816, his parents being native residents of that State. He received his early education in Georgia and commenced the study of medicine when only 18 years old. He graduated from the College of Medicine, of Louisville, Ky., in 1843, and in 1844 from Jefferson Medical School at Philadelphia.

In 1847 he settled in Jacksonville, Ala. When the Mexican war broke out Dr. Clark was appointed by President Polk, surgeon in the United States army and served with Butler's Palmetto South Carolina regiment, being with that gallant command in all its battles up to the capture of the City of Mexico.

During the late war Dr. Clark was surgeon in the Confederate army. Starting out as a regimental surgeon, he was soon transferred to the charge of the Alabama hospital in Richmond, afterward to the hospital in Montgomery and then to Columbus, Ga., at which point he was stationed when he gave his parole to General Wilson at the end of the war.

Dr. Clark was a resident of Selma and practiced his profession there since 1865 and no citizen has ever been held in higher or more affectionate esteem. He was an ardent advocate of the educational interests of the city. holding the responsible position of president of the city school board of

Selma for a number of years, always zealous in the performance of his duties, and it is no exaggeration to say that no citizen of Selma has contributed more to the upbuilding of the public school system than this loved and honored physician. He was for several years president of the Selma Medical Society, a prominent member of the State association, a forcible writer in several of the leading medical magazines and he stood in the front rank of his profession as one of the leading practitioners and surgeons in the South.

In 1853 Dr. Clark was married at Jacksonville, Ala., to Miss Nancy W., daughter of Thomas J. Davis. Five children survive this union: Percy Clark, of Washington, D. C., Mrs. J. C. Ware of Montgomery, Mrs. A. J. Harris, Mrs. T. H. Lewin and Misses Julia and Jessie Clark, of this city.

Dr. William S. Hurd, a well known physician of Paterson, N. J., died Aug. 18, after a long illness. His system never fully recovered from blood poisoning, the result of an accidental cut received while performing an autopsy some years ago. He was born at Fishkill Landing, N. Y., in 1847, went to Paterson with his parents when a boy, and at the age of 17 enlisted in the 35th regiment, serving during the last year of the war, and becoming a corporal. He was graduated from the College of Physicians and Surgeons in New York in 1877, at the head of his class. In 1878 he was elected assistant city physician of Paterson, and served five terms by yearly re-election. He also served a three year term as coroner of Passaic county. In politics he was a republican. During the smallpox epidemic of 1882 he did devoted service for the city, breaking down his health and losing most of his private practice, which it took several years to reëstablish. He was a skillful caricaturist, contributing occasional sketches to illustrated periodicals, and was an amateur actor of Shakesperean tastes. He was a member of the Knights of Pythias and of the Passaic County District Medical Society. Dr. Hurd was a member of the United States Medical Examining Board for the Vth Congressional District of New Jersey. A wife and daughter survive him.

Dr. James O'Rorke died at his home in West Forty-sixth street, on Sunday, July 30, 1893. The deceased was a graduate of the Jefferson Medical College of Philadelphia, of the class of 1847, a consulting physician to St. Vincent's hospital, a practitioner held in high esteem by his professional brethren and by the community.

Dr. George W. Benson of Baltimore, Md., died August 22. Dr. Benson served two terms as health commissioner. During Dr. Benson's term two smallpox epidemics prevailed—in 1872 and again in 1892. Much credit was given the health officer for the excellent judgment displayed and the speedy stamping out of the dreaded scourge.

He was born April 8, 1831, in Princess Anne, Somerset county, Md. When 17 years of age he accepted a position in a drug store in this city. Three years later he was graduated at the Maryland University. He began the practice of medicine, having for many years an office on Hanover street, near Hill. In 1856 he was coroner of the Southern district, serving two terms. He was regarded in the southern section of Baltimore as one of the most eminent physicians of his time. Dr. Benson married Miss Susie E. Dexter, of Chelsea, Mass., in 1852, who died, leaving one son, Morton, in 1874. Fifteen years ago he married Mrs. Susan Waite, who survives him.

Dr. Benson has for the past year been a sufferer from Bright's disease of the kidneys and heart failure. Being a man of iron nerve, he bore up under the affliction and continued his large practice until about one month ago, when he was compelled to remain indoors. A few days later he was unable to leave his room, and remained in bed until his death occurred.

Dr. George F. Thornton died Aug. 15, 1893, at San Francisco. Death resulted from paralysis. Dr. Thornton was a native of Green county, Alabama. He received his education at the Alabama State University and the New Orleans Medical College. During the late war he served as surgeon in the Confederate army, and in 1869 came to California. Dr. Thornton was in 1874 one of the leading spirits in the Newark Land and Transportation Company, and was for a number of years manager of large land interests in Kern county. He leaves a widow, three sons and a daughter.

Dr. C. C. Radmore, aged 65, died at Lincoln, Neb., Aug. 19. Dr. Radmore was a native of Pennsylvania and was a soldier in the Mexican war as well as the late civil war. He practiced in Winona, Ill. During the war he was connected with the 44th and 107th Illinois regiments and was successively brigade and corps surgeon. He came to Lincoln in 1868, where he has since resided.

Dr. Isaac Parker of Morgan county, died at Chester Hill, O., aged 78 years. He resided at Chester Hill for 50 years, was the pioneer physician of that county, and was well and favorably known all over the county. His death was the result of age.

Dr. A. S. Luse, a California pioneer and an old resident of Los Gatos, died at his home in that city, Aug. 14, 1893. The deceased was 74 years of age, born in Mount Pleasant, Westmoreland county, Pa.

Dr. Harrison S. Gardner of Cedar Springs, died in Grand Rapids, Mich., August 22d. He was 53 years old and a well known citizen of Cedar Springs, and past master of Cedar Springs Masonic lodge.

Dr. Chas. L. Seeman of New Orleans, died August 15th. He was a graduate of Tulane University, and coroner of New Orleans for the past year.

Dr. J. W. Redden died at Topeka, Kan., Aug. 5. Dr. Redden was a native of Delaware, educated at Dickinson College and a graduate of Jefferson Medical College. He was formerly Secretary of the Kansas State Board of Health.

Dr. J. W. Branham, Asst. Surgeon U. S. Marine Hospital Service, died of yellow fever, at Brunswick, Ga., August 20, 1893. Dr. Branham had only recently been appointed.

Dr. S. J. F. Miller of Augusta, Me., formerly superintendent of the Dayton (Ohio) Insane Asylum and surgeon of the Soldiers' Home at Milwaukee, died Aug. 7.

Dr. H. Knapp of Lathrop, California, died August 14, 1893. He was 80 years of age.

Dr. Lee M. Bentley died near Coffeyville, Ark., August 19th, 1893.

Dr. Horace B. Sisson, a resident of Ottumwa, Iowa, since 1854, died at his home Wednesday at the age of 72 years.

Dr. George H. Walling of Louisville, father of Dr. Willoughby Walling, died at Louisville, Aug. 21.

Dr. J. B. Newman of Great Falls, Montana, August 13, 1893.

Dr. Harry Sedgwick of Martin's Ferry, Ohio, August 19.

Dr. Thos. E. Cooper of Allentown, Pa., August 18.

Dr. Kunz of Monticello, Iowa, August 19.

# MISCELLANY.

**Dr. Samuel C. Schmucker.**—Dr. Samuel C. Schmucker, recently elected professor of chemistry in the Colorado Agricultural College at Fort Collins, comes from the University of Pennsylvania. He received his A. B. from Muhlenburg college in 1883, and his S. B. in 1884. During 1884-85 he was professor in Carthage College, Illinois, and subsequently was professor of chemistry in the boys' high school, Reading, Pennsylvania. Later he held the chair of natural sciences in the Indiana, Pennsylvania, normal school. Dr. Schmucker has pursued post-graduate studies in the University of Pennsylvania for three years, his major subject being chemistry. The subject of his thesis, which is now in press, is "The Electrolytic Separation of the Metals of the Second Group."

**Prizes for Life Saving Needed.**—An inquest, recently held near London in reference to the death of a lad found drowned in a canal, revealed the fact that the boy was allowed to drown alongside a canal boat, although there were a number of boatmen looking on. There is a reward offered for the recovery of a body, but none for saving life. The reward amounts to five shillings and was sufficient to deter those men from putting forth a hand to save the dying lad. It was testified that it had been observed several times before that canalmen have stood idly by while persons were struggling for life in the water. The coroner explained that there had formerly been a prize offered for the rescue of drowning persons, and that men would push one another into the canal and afterward claim the rescue money. This was more than the vestrymen would stand. The consequence has been that not a few innocent lives have been lost through accidental drowning that might readily have been saved.

**Army Hospital Corps—A New Company of Instruction.**—It is understood that the Surgeon General of the Army will organize a company of instruction at Washington Barracks, D. C. The two companies at present in existence are stationed at Fort Riley, Oklahoma Territory and Fort D. A. Russell, Wyoming. These stations were originally selected on account of their central position, so as to lessen the expense of transporting trained men from the companies to their posts. The surgeon general, however, regards the location of one of these companies as a mistake. Many men are recruited from the cities of the east who, under present conditions, have to be sent to Fort Russell for their training and afterwards back to the east for duty at some seaboard station. This may be avoided by having one of the companies of instruction in the east, and General Sternberg is understood to prefer Washington Barracks as the company will there be available for service in connection with the Army Medical School. Young medical officers on duty at the latter will have opportunity of becoming acquainted with the methods of drawing food and clothing for the men, keeping their accounts and other matters of company administration. Instead of transferring the company from Fort D. A. Russell to Washington a new company will be organized at the latter place, and the organization of the old company will be permitted to lapse when its members have been drafted off to their permanent posts. The company at Fort Riley will be retained as being in a suitable location for the supply of western posts with trained men. The organization of these companies is said to have had gratifying results, the qualifications of the men who have had the benefit of the special course of training and study being considered much superior to those of men trained at the post hospitals.

**Higher Medical Education.**—The establishment of the Johns Hopkins Medical School, and the College of Physicians and Surgeons of Richmond marks a new era in medical education south of Mason and Dixon's line. For a number of years the Johns Hopkins has been laying the foundation for the school, and from present indications it will be thoroughly equipped. Four annual courses of lectures will be required, and a high preliminary entrance examination. The College of Physicians and Surgeons will comply with the requirements of the American Medical College Association. Several of the older schools will also commence the requirement of a fourth year course, and the indications are that the day is not far distant when the facilities for acquiring a medical education in this country will be equal if not superior to those of the older institutions in Europe.

**Small Caliber Projectiles.**—During the past year Dr. LaGarde of the army, has conducted a series of experiments to determine the character of the wounds caused by small caliber projectiles on the human body. The experiments were performed at Frankford Arsenal, Pa., with rifles and bullets prepared by the Ordnance Department specially for the occasion. The calibers used for comparison were .45" and .30". The range of explosive effects was greater with the latter, extending as far as 350 yards, and at such ranges shock was severe, apertures of entrance small, inverted and often blackened, and those of exit larger and everted, the soft parts extensively ruptured and the bones shattered. Beyond this range there was much less disorganization in the track of the smaller than of the larger bullets; but at from 1,500 to 2,000 yards, when the velocity became lessened, the effects again took on the character of those at the shorter ranges. Dr. LaGarde's experiments embraced also a determination of the heat imparted to projectiles by firing and impact; the influence of firing on germs present on the bullet and the comparative penetration and destructive effects of various hard metal cased projectiles. The last mentioned series of experiments formed the subject of a paper read by him at the meeting of the Association of Military Surgeons of the National Guard of the United States reported in our issue of August 19th. It is expected that a full report of the experiments conducted at the Frankford Arsenal will be published in the forthcoming report of the surgeon general of the army.

**Scurvy at a County Lunatic Asylum.**—Commissioner Reeve of the New York State Board of Charities, is reported in the daily press as charging grave mismanagement at the St. Johnland asylum, which is the country branch of the Kings county asylum He alleges that scurvy has appeared more than once among the insane paupers, as the result of an inadequate supply of fresh vegetables. Of the 900 acres belonging to the St. Johnland plant, not less than 200 are eminently suitable for the cultivation of antiscorbutic vegetables: there is an abundance of available labor among the inmates, whose health would be the better if they were intelligently employed in the fields; there is a farmer superintendent, who is without implements. Yet for days together the only vegetable food of an antiscorbutic character has been dried apples. "This is but one of a multitude," says the official, "of acts of a similar tendency that have come under our observation." And he added: "And when the epitaph of St. Johnland is written, let the words 'Flagrant and criminal waste of public money' be inserted at all hazards." The question will most certainly arise in some inquiring minds whether or not the State Commissioners of Charities have done their full duty after coming to the knowledge that scurvy has been superadded to insanity, in the cases of these unfortunate St. Johnland inmates, and have not made an official declaration of that knowledge.

**Typhus Fever at a Summer Resort.**—At the Manhattan Beach Hotel, Coney Island, there has been discovered a case of typhus fever, in the person of one of the hotel employes. The patient was a yard man whose duties brought him in contact with the food supplies of the house, at the time of their reception from the freight cars. This was the only case known in the vicinity of New York for several weeks, and the health authorities had been felicitating themselves over the complete stamping out of the recent plague. It is not certainly shown that the patient contracted the disease in New York city; in fact, the officials having charge of its investigation incline to the theory the man was exposed to contagion at some place in Pennsylvania. But the name of the place is unknown or unreported. The patient was removed to Bellevue Hospital, and thence to the North Brother Island fever hospital. The case was at first considered one of alcoholism. The roommates and fellow yardmen were ordered to be isolated. The outcome of this unusual occurrence will be interesting.

**Minnesota State University.**—The board of regents of the State University held a session August 18, at the capitol, and reached a final decision regarding the new library and assembly hall. The revised plans prepared by Architects Buffington & Eldridge of Minneapolis, were submitted and were accepted with some minor changes. The building is not to cost more than $155,000, including architects' fees and salaries. The selection of the stone for the building and a superintendent have been left to committees.

Dr. H. M. Reynolds has been appointed veterinarian of the schools at a salary of $500 a year.

The following resolutions, which were adopted, were presented by Mr. Northrup:

*Resolved*, That the four colleges of the medical department be made independent, their interests being managed by their own faculty, subject to the board of regents; that the office of dean of the department of medicine be abolished, and Perry W. Millard be appointed dean of the college of medicine and surgery; that the executive committee of the medical department be abolished; that the professors of chemistry, anatomy, physiology, histology and embyrology in the college of medicine and surgery be made also professors in the department of medicine, and as such instruct all students in the four colleges; that an additional room be furnished in the medical building for the homeopathic college when needed, and that the medical building be so used as to meet the wants of all the colleges impartially; that the matter of rooms and the necessity for four rooms for deans, the proper salary to be paid to Dean Millard, and the desirability of having a registrar to attend to the records of the four colleges respectively, students and their standing, to receive all bills, see that they are approved by the proper dean and duly presented to the executive committee, and attend to any other matters of common interest to the college outside of the work of instruction, be referred to the committee on the medical department to consider and report at their earliest convenience.

The following was handed in by the homeopathic faculty, but no action was taken by the regents:

First—That the department of homeopathic medicine and surgery shall have a full faculty appointed in all branches excepting those of chemistry and histology.

Second—That if this be impracticable, the primary branches—anatomy, physiology, chemistry, pathology, etc., shall constitute a department of the college separate and distinct from the various colleges in the department of medicine.

Third—That the college of homeopathic medicine and surgery shall be independent and its dean responsible directly to the president and board of regents.

Fourth—That the homeopathic department be given more room in the present building.

**Indiana Northern Hospital.**—A warrant was drawn Aug. 17 by the State Auditor of Indiana in favor of the Northern Hospital for the Insane for $2,981.23, on account of the extension of the building and other improvements. The principal part of the extension includes the new dining room. The same hospital also received $6,991.75 for current expenses. The Southern hospital was allowed $5,596.21.

**Agency Physician.**—Dr. W. Wyman has been appointed physician to the Indian Agency at Leech Lake, Kansas.

**Railroad Hospital.—Logansport.**—A hospital is to be erected at Clifton Forge by the Chesapeake & Ohio, where all disabled employes of that road will be sent. The company has appropriated $25,000 for its erection.

**The State of Rhode Island and Providence Plantations** is building a hospital for the old soldiers at Bristol, in connection with the Soldiers' Home, to cost $15,000.

**The Journal** will be found on sale at W. T. Keener's, 96 Washington Street, Chicago, and at W. H. Lowdermilk & Co.'s, F Street, Washington, D. C.

**College Appointment.**—Dr. C. D. Aaron has been elected professor of anatomy by the faculty of the Detroit College of Medicine.

**New Hospital.**—A new hospital is to be built at Grand Rapids, Mich., under the auspices of the Sisters of Mercy.

**Cholera.**—A case of cholera was reported at Jersey City Hospital, August 30.

## THE PUBLIC SERVICES.

### Notice.

An Army Medical Board will be in session at Washington, City, D. C., during October, 1893, for the examination of candidates for appointment to the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before September 15, 1893, for the necessary invitation, stating the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from whence they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal knowledge, from at least two physicians of repute, as to professional standing, character, and moral habits. The candidate must be between 22 and 28 years of age, and a graduate from a Regular Medical College, as evidence of which, his diploma must be submitted to the Board.

Further information regarding the examinations may be obtained by addressing the Surgeon General U. S. Army, Washington, D. C.

GEO. M. STERNBERG, *Surgeon General U. S. Army.*

### Museum of Hygiene, Medical Department, U. S. Navy.

This institution, which has its home at 1707 New York avenue, Washington, D. C., was founded and officially recognized by Congress in 1883. Since then it has grown under the fostering care of Surgeon General John M. Browne, Medical Director Philip S. Wales, and Surgeons White, Kidder, Owens, Ames and others. Its catalogue, recently issued to indicate the extent and direction of its growth, is an octavo pamphlet of 136 pages, which contains a list of about two thousand specimens illustrating conditions of local hygiene pertaining to soil, air, the construction of dwellings and their aggregation into towns and cities; and of course the construction of ships with their heating, lighting, ventilation, air space and other accommodations or lack of accommodations does not fail to take a prominent place in the collection. Food supplies, clothing, safety appliances in traveling by land or water, protection against fire, etc., disinfection and the care of wounded men also find satisfactory provision for their illustration. The catalogue gives carefully prepared descriptions of so many of the specimens that a perusal of its pages would to many minds be almost equivalent to a personal inspection of the institution. If the existence of the Musenm were more generally known there is no doubt that it would become the depository of many specimens at present isolated in the cabinets of medical men and therefore almost valueless for educational purposes. We commend the Museum of Hygiene and give increased publicity to the desire of its director, Medical Director Wales, to extend the sphere of its usefulness.

### Retirement of Dr. Bloodgood, U. S. N.

Medical Director Delavan Bloodgood, whose retirement took place August 20, by reason of his having attained the age of 62 years, will reside in Brooklyn permanently hereafter. His long and faithful service has been conspicuous, and this officer is known among his colleagues in the American Medical Association as one of the most genial and accomplished officers among the brilliant corps from time to time delegated to attend the annual meetings. Doctor Bloodgood, although retired from the Navy, has not been retired from the Association, where his many friends will welcome him, they trust, for very many years to come.

## Marine Hospital Service.

The following circular has been issued by the acting secretary of the treasury:

*United States Quarantine Rules to be Observed in Places Infected with Yellow Fever.*

Treasury Department, Office of the Secretary.
Washington, D. C., August 12, 1893.

*To medical officers of the Marine-Hospital Service, quarantine officers in the United States, and others concerned:*

Pursuant to the act of February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," the following regulations have been made thereunder and are hereby promulgated according to the terms of the act:

1. All persons affected with yellow fever, or who are believed to have been exposed to the infection, will be so isolated under observation until free from infection and all their effects properly disinfected. Communication with infected places will not be allowed except for the necessary conveyance of supplies, etc., which must be under the supervision of a duly qualified medical sanitary inspector.

2. The localities contiguous to those infected and infected localities, so far as it may be safely done, should be depopulated as rapidly and as completely as possible; persons from non infected localities, and who have not been exposed, leaving without detention; those who have been exposed, or who come from infected localities, being required to undergo a period of detention of ten days from date of last exposure in camps of probation. The clothing or anything ca
shall not be allowed to leave the infected

3. Camps of probation shall be inspectec
the suspects should be conveniently segregated in groups. A hospital sufficiently isolated shall be provided for each probation camp.

4. When practicable, camps of detention should be provided for those who require it.

5. Buildings in which cases of yellow fever have occurred, and localities believed to be infected, must be disinfected as thoroughly as possible.

6. As soon as the disease shall have been declared epidemic, the railway trains carrying persons who may be allowed to depart from a city or place infected with yellow fever shall be under medical supervision. A medical sanitary inspector should accompany each train when practicable, and enforce prompt isolation of any person who may be attacked with the disease, and report the same immediately to the proper health authorities. When in the opinion of the proper health authorities, it is necessary, the railroad companies should be required to attach an extra car for hospital purposes to each train carrying persons from an infected place, which may be side tracked at some safe and convenient locality on the road.

Charles S. Hamlin, *Acting Secretary.*

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**Army Changes.** Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from August 19, 1893, to August 25, 1893.

By direction of the Secretary of War, a board of medical officers, to consist of Col. Charles H. Alden, Asst. Surgeon General; Lieut.-Col. Wm. H. Forwood, deputy Surgeon General; Major Charles Smart, Surgeon; Capt. Walter Reed, Asst. Surgeon, and Capt. James C. Merrill, Asst. Surgeon, is constituted to meet at the Army Medical Museum Building in this city, on the 11th day of September, 1893, for the examination of candidates for admission to the Medical Corps of the Army. Par. 1, S. O. 193, A. G. O., Hdqrs. of the Army, Washington, August 23, 1893.

By direction of the Secretary of War, the following named medical officers are detailed to represent the Medical Department of the Army at the Pan-American Medical Congress to be held in Washington, D. C., September 5 to 8, 1893: Col. B. J. D. Irwin, Asst Surgeon General; Lieut.-Col. Dallas Bache, deputy Surgeon General; Major David L. Huntington, Surgeon; Major Charles Smart, Surgeon.

A board of officers to consist of Col. Charles H. Alden, Asst. Surgeon General; Lieut.-Col. Wm. H. Forwood, deputy Surgeon General; Major Joseph K. Corson, Surgeon, is by direction of the Secretary of War, appointed to meet at the Army Medical Museum Building, Washington, D. C., Monday, September 4, 1893, for the examination of such officers as may be ordered before it, to determine their fitness for promotion.

Col. Charles H. Alden, Asst Surgeon General, on being relieved from duty as medical director Dept. of Dakota, will proceed to this city and report to the Surgeon General U. S. A. for duty in his office, and as president of the Army Medical School, Washington, D. C.

Capt. J. L Powell, Asst. Surgeon U. S A., is hereby granted leave of absence for one month, with permission to apply for an extension of ten days.

Lieut. Col. Wm. D. Wolverton, deputy Surgeon General, is relieved from duty at Watervliet Arsenal, N. Y., and assigned to duty as medical director Dept. of the Columbia, to relieve Lieut.-Col. O C. Byrne, deputy Surgeon General U. S, A. Lieut.-Col. C. C. Byrne, deputy Surgeon General, on being relieved from duty as medical director Dept. of the Columbia, will report for duty as medical director Dept. of Dakota, to relieve Col. Charles H. Alden, Asst. Surgeon General.

Capt. Paul Shillock, Asst. Surgeon (in the field), is granted leave of absence for one month, to take effect about September 1, 1893, with permission to apply for on extension of fifteen days. The commanding officer U. S. Troops in the field near Fruitland, N. M., is authorized to employ a citizen physician in cases of necessity during absence of Capt. Paul Shillock, Asst. Surgeon.

Capt. Wm. F. Carter. Asst. Surgeon, is granted leave of absence for one month, to take effect upon the return of Asst. Surgeon Glennan from leave.

Major Justus M. Brown, Surgeon, is relieved from duty at Ft. Meade, S. D., and assigned to duty at Ft. Wayne, Mich.

Capt. M. W. Wood, Asst. Surgeon U. S. A., is granted leave of absence for one month to commence about September 1, 1893.

Capt. R. J. Gibson, Asst. Surgeon U. S. A., is granted leave of absence for one month.

By direction of the Secretary of War, the following named officers will report in person to Col. C. H. Alden, Asst. Surgeon General, president of the examining board appointed to meet at the Army Medical Museum Building, September 4, 1893, for examination for promotion: Capt. Curtis E. Price, Asst. Surgeon: Capt. E. T. Comegys, Asst. Surgeon; Capt. Walter Reed, Asst. Surgeon; Capt. *James C. Merrill, Asst. Surgeon.*

**Navy Changes.** Official list of changes in the Medical Corps of the U. S. Navy, for the week ending August 26, 1893.

Medical Director D. Bloodgood, placed on retired list August 20, 1893.

Surgeon Geo. F. Winslow, from "Monterey," and to the "Philadelphia."

Medical Director A. A. Hoehling, president of board to examine applicants for Naval Academy.

P. A. Surgeon G. T. Smith, from "Baltimore," and to "Wabash."

P. A. Surgeon R. M. Kennedy, from "Wabash," and to the "Baltimore."

Asst. Surgeon L. H. Stone, from hospital, New York, and to the "Minnesota."

Asst. Surgeon J. E. Page, from the "Minnesota," and sick leave for three months.

**Marine Hospital Changes.** Official list of changes of stations and duties of medical officers of the U. S. Marine Hospital Service, for the eight weeks ended August 5, 1893.

Surgeon C. S. D. Fessenden, to proceed to Mobile, Ala., for duty, June 16, 1893. To proceed to New Orleans, La., as inspector, August 1, 1893.

Surgeon R. D. Murray, granted leave of absence for seven days, June 21, 1893.

Surgeon John Vansant, to proceed to Wilmington, N. C., for duty, June 16, 1893.

Surgeon H. W. Austin, to inspect Delaware Breakwater Quarantine Station, July 22, 1893.

Surgeon J. M. Gassaway, to proceed to Detroit, Mich., and Chicago, Ill., as inspector, July 12, 1893.

Surgeon Fairfax Irwin, detailed for duty in office of the U. S. Consul, London, Eng., July 2, 1893.

Surgeon H. R. Carter, to proceed to Brunswick, Ga., for temporary duty, June 28, 1893.

P. A. Surgeon C. T. Peckham, granted leave of absence for six days, June 22, 1893.

P. A. Surgeon S. D. Brooks, granted leave of absence for three days, June 22, 1893.

P. A. Surgeon P. M. Carrington, detailed for duty in office of U. S. Consul, Bremen, Germany, June 15, 1893.

P. A. Surgeon J. J. Kinyoun, to rejoin station, Washington. D. C., July 10, 1893. To inspect Camp Low, N. J., July 29, 1893.

P. A. Surgeon H. T. Goodwin, granted leave of absence for three days, June 12, 1893. To proceed to Louisville, Ky., for duty, July 12, 1893.

P. A. Surgeon G. T. Vaughan, to proceed to Chicago, Ill., for temporary duty, July 10, 1893.

P. A. Surgeon H. D. Geddings, to proceed to Delaware Breakwater Quarantine for duty, June 30, 1893.

P. A. Surgeon J. C. Perry, to proceed to Portland, Me., for temporary duty, July 8, 1893.

Asst. Surgeon W. G. Stimpson, detailed for duty in office of U. S. Consul, Glasgow, Scotland, July 7, 1893.

Asst. Surgeon C. H. Gardner, granted leave of absence for fourteen days, July 19, 1893.

Asst. Surgeon Edgar Strayer, to proceed to Vineyard Haven, Mass., for temporary duty, July 8, 1893.

Asst. Surgeon J. H. Oakley, to proceed to Wilmington, N. C., for temporary duty, June 24, 1893.

Asst. Surgeon Seaton Norman, granted leave of absence for three days, July 24, 1893.

Asst. Surgeon J. W. Branham, to proceed to Brunswick, Ga., for temporary duty, July 25, 1893.

Asst. Surgeon E. K. Sprague, granted leave of absence for fifteen days, July 22, 1893.

Asst. Surgeon Emil Prochazka, relieved from duty at Ellis Island, N. Y., and ordered to report to medical officer in command, New York City, July 29, 1893.

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## LETTERS RECEIVED.

**(A)** Adams, S. S., Washington, D. C.; Atchison, W. A., Nashville, Tenn.; Ashmun, G. C., Cleveland, Ohio; Alden. C. H., St. Paul, Minn.; Adams, Frances A., Syracuse, N.Y.; **(B)** Bastin, J. V., Belle Union, Ind.; Bleyer, J. Mont., New York; Bishop, S. S., Chicago; Barry, D. J., Schenectady, N. Y.; Bates & Morse, Adv. Agency, New York, N. Y.; Baldwin, A. H., Washington, D. C.: Breakey, J. R,. Alma Center, Wis.; Bessey, J. M., Toledo, Ohio; Brown, L. F., Baltimore, Md.; **(C)** Cone. Andrew, New York, N. Y.; Christopher, W. S., Chicago; Conkling, G., Glen Falls, N. Y.; Cincinnati Hospital, Cincinnati, Ohio; **(D)** Dwyer, M. J., Albany, N. Y.; Duncan, J. H., St. Louis, Mo.; **(E)** Evans, W. A., Chicago; Eastman, Chas. A., Winthrop, Mass.; **(F)** Ferguson, F., New York, N. Y.; Fernandez, A. M., Philadelphia, Pa.; Forsyth, A. H., Lakeview, Mich.; Fordyce, Miss A., Union Springs, N. Y.; **(G)** Grow, E. P., St. Louis, Mo.; Gillin, C. H., Doon, Iowa; Ground, Wm. E., West Superior, Wis.; Greene, C. S., San Francisco, Cal.; Gurley, Washington. D. C.; **(H)** Hamell, R. F., Denver, Colo.; Hosmer, A. J., Ashland, Wis.; **(J)** Jones, T. R., Milwaukee, Wis.; **(K)** Kegan, Paul, French, Trübner & Co., London, Eng.; Kinnaman, A. S., Cleveland, Ohio; Kirkpatrick, A. B., Philadelphia, Pa.; Kelley, W. H., Covington, Ky.; **(L)** Laidley, L. H., St. Louis; Lydston, G. Frank, Chicago; **(M)** Marks, A. A., New York, N. Y.; McKelway, Geo. J. Philadelphia; Murfree, J. B., Murfreesboro, Tenn.; McClary, C. E., Syracuse, N. Y.; Mercer; Alfred, Syracuse, N. Y.; **(N)** Nash, H. W., Norfolk. Va.; New York Post Graduate Medical School, New York, N. Y.; Newman, R. A., Detroit, Mich.; **(O)** Ochsner, A. J., Chicago; O'Gorman, Jas., Baltimore, Md.; **(P)** Parsons, F. S., Northampton, Mass.; Pascal, F., Chihuahua, Mexico; **(R)** Robinson, Fred. Byron, Chicago; Rachford, B. K., Newport, Ky.; Reed, C. A. L., Cincinnati, Ohio; Rutledge, L. R., Blairsville, Pa.; Ruggles, Gale & Co., Columbus, Ohio; **(S)** Scott, J. W., Springfield, Ill.; Smith, A. Noel, Dover, N. H.; Sundberg, J. C., Bagdad, Turkey; Stewart Coöperative Co., South Bend, Ind.; **(T)** Talbot, E. S., Chicago; **(Y)** Young, Staley E., Edgewater, Va.; **(W)** Whitford, Wm., Chicago; Wever, J. L., Leavenworth, Kan.; Wyman, Walter, Washington, D. C.

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## ADDRESSES.

### FIRST PAN-AMERICAN MEDICAL CONGRESS.

AN ADDRESS DELIVERED BY THE PRESIDENT OF THE CONGRESS.

WILLIAM PEPPER, M.D., LL.D.
PROVOST AND PROFESSOR OF THE THEORY AND PRACTICE OF MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA.

In the City of Washington, D. C., September 6, 1893.

*Gentlemen of the First Pan-American Medical Congress:*—This occasion is an unique one, and the thoughts which force themselves on the minds of all of us are, I am convinced, so similar that the briefest greeting might well seem the most fitting address. But when I reflect that I stand here to represent the original committee appointed in pursuance of the resolution which was adopted unanimously on May 5, 1891, at the meeting of the American Medical Association, and that this resolution extended a cordial invitation to the medical profession of the Western Hemisphere to assemble here in a Congress, I realize the unusual dignity of the duty I must discharge. If anything could add to the dignity of this assemblage, which for the first time asserts formally the organic union of the physicians of all America, it is the fact that the Congress of the United States, impressed with the importance of our proposed meeting, passed a joint resolution (July 18, 1892), requesting the President to extend those invitations in response to which we welcome the presence here of official delegates from all the governments of the Western Hemisphere. In like manner are the several States of our own Union, the principal municipalities, and many of the leading educational institutions, both of North and South America, represented officially. You will not, then, think it strange that, called upon to address such an assemblage in this Columbian year, it should seem less fitting to dwell upon any technical topic than to turn our thoughts to the state of this continent and of its aboriginal inhabitants at the time of its discovery by Columbus, and to the obstacles which opposed him and the great men who completed his work. For these have had a bearing on the racial developments which have since occurred here, and should be held in mind in any estimate of the progress we have made during the subsequent four centuries. The state of medical science in Europe at the time of the discovery, and the spirit which has controlled its subsequent course, are fitly to be studied in connection with what we have accomplished during the same period and with the opportunities which present themselves to us at this time.

#### GENERAL RECOGNITION OF THE IMPORTANCE OF THE MEETING.

The recognition of the appropriateness and importance of this great meeting has been immediate and universal. International although it is, the basis of its organization and the special features which mark it, remove all possible suspicion of an imitation of, or of interference with, the great International Congress whose successive meetings form a crescendo scale of scientific and administrative triumphs which the medical profession of the world regard with justifiable pride.

Our executive committee, and our efficient general secretary to whose unselfish energy and masterly powers of organization we owe a great debt of gratitude, studiously avoided the possibility of any such interference, by delaying the selection of a date for our meeting until that of the Congress at Rome was announced, and by then adopting a date which not only permitted but encouraged the presence later at Rome of those who should gather here. I can only add my deep regrets that the unhappy reappearance of cholera in Southern Europe—striking example as it is of the urgent importance of the very work which calls us together—has necessitated a postponement until next spring; a postponement which, however, there is no reason to fear will lessen the complete success of the meeting on its newly-announced date. The International Medical Congress is, indeed, a splendid demonstration of the solidarity of the profession and of the world-wide scope of the objects we pursue.

This Congress represents much more, however, than our common interest in medical science and the common feeling of brotherhood which animates the entire profession. It is, indeed, it always has been, and forever may it so continue, the glory of the medical profession that their allegiance is one and undivided, for their service is solely in the cause of truth and humanity. Dynasties have risen and crumbled; the map of the world has been changed times almost without number, but the march of medical science through the ages has been ever onward and upward toward those lofty goals—the prevention of disease, the relief of suffering, the improvement of the race.

For us who meet here there is all of this glorious recollection and animating purpose, and there is much more to unite and to inspire us. We meet under the shadow of giant conceptions, as old as Aristotle, which agitated the minds of the great thinkers of antiquity, and were but slowly approaching a definite form when the sublime faith and genius of Columbus solved the problem of the globe.

It is true that this vast American continent, with its sixteen million five hundred thousand square miles of territory, already numbers one hundred and ten millions of inhabitants, embracing all types of human life, and many varieties of political organization. But all that has yet been accomplished is but the feeble beginning of the development which awaits us. When Canning secured the recognition of the republics of South America, he boasted that he had called the New World into existence to redress the balance of the Old, and yet the luminous suggestions of Franklin, of Bolivar, and of Blaine as to the political and commercial relations of the countries of the western hemisphere are still only prophesies which must long await their fulfillment.

The destinies of nations are slowly evolved, and occurrences which fill the horizon of a generation appear to the broad gaze of history as mere features in the great panorama of the ages.

### HISTORICAL REFLECTIONS.

Even a period of four hundred years is but a fraction of the history of Spain, of France, of England. Yet four hundred years ago this entire continent was not only undiscovered and unknown, but its very existence was unsuspected save in the ingenious speculation of philosophers. We recall the familiar but ever interesting lines of Seneca:

> "*Venient annis sæcula seris*
> Quibus Oceanus vincula rerum
> Laxet, et ingens pateat tellus,
> Tiphys que novos detegat orbes
> Nec sit terris ultima Thule"—

and do not marvel that their strain of glowing conviction should have led Columbus to write them out twice over in his "Profecias." But all the same, this new world lay shrouded in the obscurity of the great Sea of Darkness, cut off, as we have since learned, from the known inhabited world, by changes wrought in remote geologic eras, and waiting the fullness of time which should lead the inspired genius of Christopher Columbus to seek the east by sailing west. We now know that in his quest of a western passage to Asia he reached the eastern shore of this continent on October 12, 1492, but even to the time of his death, on January 20, 1506, neither did Columbus nor any voyager or writer have any conception of the vastness and real significance of his discovery. All that the geographical knowledge of the day enabled them to grasp was the belief that Columbus had found a new route to the Indies by sailing west. Within a few years, however, the daring sailors of Spain and Portugal, of Italy and of England, pushed their voyages along the coasts. The astonishing discoveries of Americus Vespucius on his celebrated third voyage in 1501–02, when between Lisbon and the Island of South Georgia he traversed an arc of ninety-three degrees, led him to apply for the first time to this continent (it really was South America of which he spoke) the title of New World (Mundus Novus). It concerns us not to consider further how, by no intent or design of Vespucius, portions of South America at first, and later the entire continent, came after his death to be named after him. Yet when a few days ago I held in my hands the little quarto published in 1507, in which Professor Martin Waldseemuller, of the College of Saint Dié in Lorraine, first suggests the name America, in utter ignorance that the coast explored by Vespucius was continuous with or even related to the land discovered by Columbus, I could not help smiling sadly at the frantic and fruitless efforts we make to secure immortality by our petty observations, while here Fame, in strange whimsy, threw her laurels for the greatest discovery ever made around the head of one who neither had nor preferred a claim to it.

### WHAT GEOLOGY AND PALEONTOLOGY HAVE TAUGHT.

Geology and paleontology have taught us that this so-called New World is in reality, in a scientific sense, better entitled to the name of the Old World. The oldest known strata have their widest development on its surface, and animals, such as the horse, which are said to have been introduced after 1492, are shown to have had their original habitat here, and to have migrated hence to Europe, so that Cortes and Pizarro only reintroduced them to their former home. It is more important to recall the fact that the entire stretch of North and South America was, at that date, 1492, peopled more or less thickly with the descendants of tribes who had resided here from very remote antiquity. A high authority assures us that the number of these aborigines was probably from twelve to fifteen millions, and in spite of considerable differences in physical appearance, as between the Iroquois of New York and the Aztecs of Mexico or the Incas of Peru, in dialect and habits, it is generally conceded that this vast aboriginal population, of North America and South America alike, with the exception of the Eskimos, belonged to one great race of Red Men.

Eskimos and Red Men alike seem to have migrated to our continent at one time, or more probably in successive waves, in the remote past, either when the northwest corner of America was joined to Siberia by the elevation of the area now known as Bering Sea, or when the lofty submarine ridge which now passes from France to Greenland was elevated so that it would be possible to travel on foot from Europe to America. If the attempt be made to decide at what period of geologic time such immigration occurred, and whether in one great migration, or, as seems most probable, in successive waves, problems of extreme if not insurmountable difficulty present themselves.

The aborigines who were living on this continent at the time of its discovery by Columbus presented, it is true, considerable differences in the stage of development they had reached, as well as in their language and even in their appearance. There are long intervals of social development evident between the squalid sty of the California savage, the log house of the Iroquois, and the great structure of the Zuni, of Tlascala, or of Uxmal. Yet in them all can be demonstrated an underlying principle of adaptation to a certain mode of communal life such as all American aborigines are believed to have practiced. All attempts to distinguish the existence of special races, as of the mound-builders, have broken down in the light of critical study, and the powerful arguments of philology confirm the results of zoölogical study as to the essential unity of the American red race. The tribes in different parts of this vast territory certainly presented marked differences in physical appearance, and our ethnological collections show that as regards size and weight of frame and shape of skull considerable variety existed among them. But all possessed the cinnamon-colored or copper-colored complexion, the high cheek bones and small, deep-set eyes, the straight black hair, with scanty or absent beard; and the conclusion of the most competent authorities is that no sufficient differences, physical, linguistic, or social, existed to invalidate the evidence in favor of the unity of the race.

Fortunately we are not called on to attempt to read the geological record. For our purpose it is indifferent whether all the relics of the ancient

Americans are of the neolithic type, or whether the apparently plausible claim be ultimately established that paleolithic remains are also found in various places. This at least we know, that the soil and climate had shown themselves favorable to the development of a population already numerous, vigorous, hardy and enduring, and brave and warlike, though often cruel, and evidently advancing in social development, though at very different rates at different localities. Ignorant as we are of their primitive origin, it is doubtful if the most earnest advocate of the monoganist view that all mankind was originally descended from one pair, will urge that our aborigines were descended from a single couple, or even from a few boat-loads of Asiatics accidentally carried to our Pacific coast or that we shall hear again the arguments drawn from the many striking resemblances between the myths, languages, customs or hand-wrought objects of the aboriginal Americans and of various Oriental nations. The surprise which, I am sure, all of us have experienced at these resemblances must be checked by these two thoughts so well expressed by Fiske and by Lubbock respectively, that one of the most important lessons impressed on us by a long study of comparative mythology is that human minds in different parts of the world, but under the influence of similar circumstances, develop similar ideas and clothe them in similar forms of expression; and again, that different races in similar stages of development often present more features of resemblance to one another than the same race does to itself in different stages of its history.

### TREATMENT OF THE ABORIGINES.

An immense amount of sympathy has been expended upon the cruel treatment of the American aborigines by the European invaders. Of course, it was the sad old story, so often repeated, whenever a better armed and more highly civilized power has come into conflict with a primitive, ignorant, and ill-armed people. Over the ghastly picture of Indian slavery one would indeed wish to draw a veil, though its darkest shadows are relieved by the splendor of the character and labors of the illustrious Las Casas, and by the enlightened actions of those great men, Emperor Charles V, Pope Paul III, and Cardinal Ximenes. But it is a romantic extravagance to deplore the destruction of any system of government or society which existed in 1492 in any part of the continent. If the present state of the native Indian population in North and South America is far from satisfactory, and fails to fulfill the promise shown, especially in South America during the first century after the conquest, may this not fairly be attributed to unwise legislation by the ruling nations, to the absence of continued, effective religious instruction, and to the base cupidity which has led us to promote the fatal passion for stimulants, so common among barbarous people? There seems no sufficient evidence to make us lose hope that the remains of the aboriginal Americans may, under more wise and equitable treatment, gradually develop into useful citizens of our republics, and be capable of wholesome assimilation with the body of the population.

It is easy to assert and hard to disprove that the development of the red race on this continent was progressing slowly prior to 1492. As a matter of fact, we do not possess the data, either about their early history or about the primitive condition and rate of development of any of the more civilized races, to permit us to institute a comparison. Our earliest knowledge of the ancient Egyptians, for instance, reveals them living in a state of civilization already advanced at least a full ethnical period beyond that even of the Aztecs. How many centuries had elapsed while the successive stages of savagery and barbarism were passing in Egypt can never be even surmised. There seems no reason to doubt that, had America not yet been discovered, there would have been going on here for the last four hundred years a slow and irregular approach to a higher social condition. There certainly is no doubt that during and since the conquest many sad mistakes, and not a few atrocious crimes have been perpetrated in the name of civilization and of liberty. But, on the whole, the student of history is forced to admit the enormous advantages which have resulted from the conquest, by Europeans of the fifteenth and sixteenth centuries, of tribes the most advanced of which were still in a very primitive state of civilization. I have ventured upon this rapid sketch of a familiar subject because it is well that we should be clear in our comprehension of the conditions which existed in America four hundred years ago, when the start was made to introduce the European races and civilizations.

### TWO CENTURIES REQUIRED TO DEMONSTRATE THE MAGNITUDE OF THE DISCOVERY OF AMERICA.

We meet here to-day to represent what these have accomplished in their new environment during these four centuries in regard to certain highly important subjects. We cannot fail to be interested in considering what scientific acquisitions in these branches were actually brought here, what disadvantages were to be contended with, how far our progress may be regarded as satisfactory, what great questions there are which concern us all deeply, and in what lines of research and work we may unite for the common good, and for the greater advancement of science.

The words graven on the tomb of Ferdinand Columbus in the cathedral at Seville:[1] "To Castille and Leon, Columbus gave a New World," are indeed true, but they do not express the whole truth. John Fiske well says: "The discovery of America may be regarded in one sense as an unique event, but it must likewise be regarded as a long and multifarious process. The unique event was the crossing of the Sea of Darkness in 1492, and no ingenuity of argument can take from Columbus and from Spain the glory of an achievement which has, and can have, no parallel in the whole career of mankind. It established a true and permanent contact between the eastern and western halves of our planet, and brought together the two streams of human life that had flowed in separate channels ever since the glacial period." But to demonstrate the magnitude of this discovery, to determine the physical features of this Western Hemisphere, to plant firmly the seeds of European civilization, demanded the heroic exertions of two full centuries. Not Spain alone, but Portugal, Italy, France, England, Holland, Denmark, Russia, played their part, and the names of Cabral and Pinzon and Magellan, of Cortes, Balboa, and Pizarro, of Ponce de Leon and De Soto, of Champlain and LaSalle, of

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[1] "A Castilla y á Leon Nuevo mundo dió Colon."

Drake, Hudson, Baffin, Davis and Bering, must remain associated forever with this stupendous and progressive work of discovery. Not until 1806 was the last step taken by Lewis and Clark, who then succeeded in crossing the continent of North America from east to west, and thus completed the task undertaken by Champlain in 1608. And if the mere study of the outlines and dimensions of America occupied two centuries, what are we to say of the far greater obstacles opposed to the colonization of the vast territory, and to the determination and establishment of suitable forms of government, and of harmonious relations between the numerous States and countries into which America soon came to be divided?

The older political systems of Europe seem to require still the assistance of considerable artificial support, and their occasional disturbances are of a decidedly unpleasant character. Is it strange that some of us still have our little unpleasantnesses at home or with our neighbors, which indicate that the education of our people is as yet wofully imperfect in those things that most nearly concern their welfare? Of this, at least, we may be sure, that all that promotes free intercourse among us helps on mightily the solution of these hard problems. It is a true saying that to know is to excuse, and, more than this, in regard to nations if not strictly in regard to individuals, it may be added that to know is to love. We turn with quickened interest to the sage advice of the illustrious Franklin, who, in 1749, embodied in his plan for the organization of the University of Pennsylvania an earnest advocacy of the thorough teaching of the Spanish and Portuguese tongues as likely to hasten the development of those close reciprocal relations which he foresaw would inevitably arise between the countries of the two Americas. The spirit of the age as it embodies itself in our educational systems and in our literature, the giant forces of steam and electricity, as they link together the most distant points of our territory, are working inevitably together for the enlightenment, the elevation, the better mutual understanding, and the more cordial relations of all of us.

The year whose four hundredth anniversary we now celebrate found the world stirred as never before. A work of tremendous importance for the future of the human race had been going on amid the gloom of what are often called the Dark Ages. The more closely this period of absorbing interest is studied the more do we appreciate the magnitude and the necessity of the changes effected during those centuries in preparation for the splendid activities of the Renaissance. The mission of the Middle Ages had been really, though not obviously, a cosmopolitan one, and it was fitting that the noblest achievement of the Renaissance should be the discovery of America. The barriers between nations had been lowered, and there had been going on the process of blending and interpenetration which was soon to be extended to this Western Hemisphere with such large results. The protest against mere dogma in religion and in philosophy; the revolt against usurped and abused absolutism; the demand for light and knowledge and the common rights of humanity, these awakened then to be stifled no more, but to swell forever in larger utterance until they shall, in some yet distant golden time, announce universal liberty under equitable laws and universal peace through arbitration. It is not for us to taunt the glowing expectations of the men of 1492 with their long-postponed fulfillment. It ill becomes us of to-day to speak in other than tones of humility when across the brightest spots of the vaunted civilization of the close of the nineteenth century after Christ there still fall so many dark shadows lingering from the deep medieval night.

How each generation turns aside with the restless impatience of children from the lessons of the past, and shuts its eyes to the truth which inexorable history calmly shows, that long periods of time are required for the accomplishment of each great advance in religious, or political, or social, or scientific truth.

Yet though we smile somewhat sadly as we read the bursts of enthusiasm so plentiful at that time, we dare not challenge the fitness of that grand name, the Renaissance, to the age which, through its mighty discoveries and the master minds who used them, diffused among the nations the new conceptions of the earth and the skies, of the church and the state. Only the pity of it that such long centuries of travail must ensue between this implanting of the seed of religious and political liberty and the mature growth for which we still wait.

### THE DISCOVERY OF AMERICA, THE DIVIDING LINE BETWEEN THE MIDDLE AGES AND THE MODERN ERA.

In no respect may the discovery of America be regarded as the dividing line between the Middle Ages and the Modern Era more truly than in regard to medical science. In spite of the prodigious learning of the most distinguished Arabian and Jewish physicians, such as Avicenna, the Prince of Physicians, of Albucasis, of Avenzoar, the Wise and Illustrious, of Maimonides, their medical science was too largely speculative and philosophic. Great universities were established, some of which, as those of Bagdad and of Cordova, possessed regal revenues and magnificent libraries. Numerous hospitals were founded, of which the large and wealthy one established at Cairo in 1283 merits special mention. But the outcome of this long dominion of the Arabs and the Moors, so far as concerns medical science, was merely a marked advance in chemistry and pharmacy, the introduction of many new remedies, and the advocacy of the union of the natural sciences with medicine. Their chemistry was tinctured strongly with alchemy, their clinical teaching was elementary, their diagnosis and treatment lacked the true Hippocratic force and directness.

The endless speculations and metaphysical discussions of the schools had shown that it was not that way true progress lay. Unaided observation had scarcely gone further in eighteen hundred years than the point to which the immortal Hippocrates had carried it. True medical science, which could not progress without precise methods and instruments of precision, was forced to wait until from very different quarters came the development of the natural sciences and the era of exact experimentations which alone rendered them possible. Harvey's immortal discovery of the circulation of the blood was not announced until 1616, and his almost equally important and epoch-making discovery of the origin of the higher animals from the egg was published in 1651; yet it may be safely asserted that the work of this modest and truly scientific Englishman did more to advance medicine than all the labors of all the schools from the days of Hippocrates. Not only were the facts demonstrated of infinite importance, but his method of patient, exact observation and experimentation until the truth was developed by cautious induction marks the introduction of a new era, and stamps Harvey as the father of modern medicine.

Galileo first indicated the use of the thermometer in medicine about 1595. Sagredo, of Venice, improved it in 1613, and Sanctorius, in 1625, urged its importance in the study of disease forcibly, but as yet ineffectually. Just as the astronomer, Galileo, gave us the first rude thermometer, Kepler, another illustrious astronomer, gave, in 1604, the first record of an accurate count of the human pulse. But so slowly did the importance of this datum in the study of disease impress the medical profession that the acute Sydenham, who lived until 1689, nowhere mentions a single pulse count. It is hard to find anything which illustrates better the radical difference between the spirit of medieval and of modern medicine than the vast mass of obsolete literature upon the pulse, loaded with fanciful speculation and super-refined subtleties of description, and yet wholly deficient in the only features which would give practical value to the study. What progress in exact medicine could be made without chemistry? Yet scarce any development in this branch occurred between the eighth and seventeenth centuries. And it was Boyle, the father of modern chemistry (not born until 1627—died 1691), who first succeeded in freeing from the trammels of alchemy this noble science. Not until the end of the seventeenth century did the value of quantitative analysis begin to be appreciated. Lastly, it was not until 1590 that we hear of the first compound microscope in the hands of Jansen.

Meanwhile the gross superstitions, combined with a blind dependence on the great authorities of antiquity, and especially on Aristotle and Galen, which had so long dominated medical science, yielded slowly to the growing light of positive knowledge. Fine-spun subtleties, drawn from metaphysical speculation; the fantastic notions of alchemy and astrology; the rank growth of impostures which flourished in the soil of ignorance, and the bigotry which placed every organ under the charge of a special saint and conjoined with every remedy a special form of supplication, still marked medical teaching and medical practice. But the bold, fearless, investigating spirit of the sixteenth century did its work for medicine as it did for other great matters. Vesalius (1514–1564) and his contemporaries created accurate anatomy. Paré (1509–1590) stamped imperishably on surgery the influence of his genius and lofty character. Paracelsus (1493–1541) hurled the shafts of ridicule and invective against the groveling subserviency to ancient authority, and did a rough but important stroke of work toward the emancipation of the medical mind. The grand old Hippocratic method of careful observation and cautious reasoning was reasserted, the unproductive philosophy of Galen and his Arabian worshipers was discarded, and at last there began to emerge from the darkness of so many centuries modern medicine, the medicine of loyalty to Nature and revolt against mere-human authority; of reverent skepticism and reasonable faith; the medicine of scientific experimentation and of humane vivisection, that insisted upon knowing the causes of disease and that looked to hygiene as its noblest expression.

The history of European medicine for more than three hundred years is a record of which we may well be proud, when the enormous obstacles to progress are held in view. It is not necessary to remind this audience of a single one of its great triumphs. Vesalius and Paré, Harvey and Sydenham, connect themselves with Bichat and Laennec, and Hunter and Jenner, and Pasteur and Lister, and Virchow and Koch, and the torch of genius is passed down the line of these immortals and lights up the ages with the splendor of their achievements. But it is sad to reflect upon what has been done as contrasted with what might have been. The dense ignorance of rulers and masses on scientific questions, the slow progress of sound, useful education among the people, the huge claims of imperialism and of militarism, the wanton waste of luxury, have retarded research, have left but paltry sums available for the diffusion of knowledge, have hindered the embodiment in legislation and in actuality of much that would help the healing of the nations. It is an odd commentary on the vaunted civilization of to-day to contrast the sums doled out by the most enlightened governments of Europe for the promotion of higher education and original research, or for the suppression of preventable diseases, with those lavished on the vast hosts of armed men and the huge fleets of unwieldy armored ships deemed necessary for the maintenance of peace and order.

### THE DOCTRINES OF DARWIN.

Within our own day we have seen the announcement of the grandest generalization reached by the human mind, in this century at least, and advanced in the most philosophic and inoffensive manner, received with a burst of intellectual skepticism and of religious intolerance, which showed that the old forces against which the Renaissance protested, and still protests, are yet alive, though happily shorn of most of their power. The marvelously rapid spread of the illuminating doctrines of Darwin, and their incorporation in the thought and speech of the world, and in the teachings of the churches, may indeed be pointed to as the crowning intellectual achievement of the nineteenth century.

### PROGRESS OF MEDICAL EDUCATION IN AMERICA.

If the actual progress of medical science was slow in Europe during the years which followed that *annus mirabilis*, 1492, surely no word of reproach may be uttered against the early settlers in North and South America, because, amidst their heroic efforts to conquer this vast continent, it was long before they found time or energy to devote to the cultivation of that practical and essential subject of medical science. It is true that in 1551 Charles V founded the University of Lima, in Peru, and in 1553 the University of Mexico. Yet it does not appear that medicine was taught at these universities until a little prior to 1700.

In North America, although Harvard College was founded in 1636, the title of university was first applied to the University of Pennsylvania, which in 1765 established the first school of medicine in the United States. The scattered handfuls of early settlers on our shores had, indeed, problems facing them more urgent than the promotion of science.

They differed as widely in their motives for undertaking the appalling task of conquering and colonizing America, and in their fitness for the work, as they did in their nationalities. Separated widely from the mother countries, hampered very often by unwise and vexatious interference from the home governments, they waged war against the powerful tribes of aborigines who swarmed over the country, and against the no less serious obstacles of untried climatic and political conditions. Bloody warfare raged promiscuously and disease was rife. We have seen that the work of mere preliminary exploration occupied two centuries. The close of the third century found the early struggles approaching a succesful ending, only to be followed by violent political changes, not accomplished save by long and costly wars. The English conquest of Canada in 1759-60, the achievement of independence by the United States in 1783, the establishment of the independence of the South American republics in 1810 and the ensuing twenty years—these are the events from which the future historian will date the Renaissance or the Decadence in America, and to which reference will always be made in estimating our capacity for progress in politics, in literature, in art and in science.

For a long time it seemed even to friendly critics that the new races which strove for a foothold on American soil were unlikely to thrive as vigorously as in their accustomed habitats, and the impossibility of developing a genuine and lasting American type was freely asserted. To those of us who have considered this point with anxious care the last two decades have brought results that put to rest all apprehension. Whatever may be the future changes in the political organization or relations of the countries composing America, it is a demonstrated fact that the European race in America, which already numbers over one hundred millions, will show no decline in vigor or in energy, in physical or in mental strength. It is not on account of mere bigness in material achievement that we point to the millions who fought in the great civil war; or to the one hundred and seventy thousand miles of railroad in the United States—almost as much as in all the world besides—and the $10,000,000,000 of capital invested, and the army of nine hundred thousand employes; or to that tremendous structure, the Canadian Pacific railroad; or to the plans now under consideration for developing a continuous railway system for the entire continent, from Montreal or Puget's sound to Buenos Ayres. It is, even more, as evidences of large imagination, of courageous resolution and dauntless tenacity of purpose, and of enormous power of physical endurance that we value the enterprises which have subjugated this continent so swiftly and are hastening its commercial consolidation. We may be assured that countries which have shown such sturdy love of independence and resistance to outside interference, which have displayed so much sagacity in adapting their political constitutions to their peculiar conditions, which liberate and enfranchise all who dwell within their limits and afford to all an equal chance of advancement, will work out their destinies to far larger and wiser plans of friendly coöperation than we can now foresee.

Turgot, in his memorable address in the Sorbonne, well declared: "Tous les ages sont enchainés par une suite de causes et d'effets qui lient l'état du monde à tous ceux que l'ont précédé." The discovery of America depended on the operation of causes which can be traced back many centuries. The present condition of our continent, four hundred years later, is the result of the action and reaction of mighty movements which involve every country of the world. Here is the new and probably the last great place of gathering and intermixture of all nations. Here, as nowhere else are to be studied with all the aids of exact science the problems of ethnology and sociology. Here are to be worked out to the best advantage the problems concerning the relations of man to his physical environment; and the demonstration that in spite of the apparent magnitude of the powers of nature, and in spite of the admitted influence of climate and physical condition upon the progress of civilization, the powers of man for intellectual and social advancement are incalculably superior.

In all of this work a large share must devolve upon medical men, and fortunately our position in America is one which will enable us to work together with good effect. The high average intelligence of our people will make them prompt to appreciate results of solid utility or scientific value. The enormous wealth, present and prospective, of this continent should readily be diverted more and more bountifully to the promotion of learning and research—if, as may be trusted, we shall strive more and more after peace among ourselves and abroad.

We shall never cease to be proud of our lineage, or to acknowledge the immense debt we owe to Europe. Its languages are ours; its glorious past is part of our heritage; its mighty names in art and philosophy and science are household words with us; its rapidly advancing civilization incites us to loftier efforts. But the balance between the Old and the New Worlds is being redressed.

All know how the examples of our young and vigorous communities have supplied and fed the infectious principles of political liberty and of social equality. In every struggle for the rights of man, from the terrible but beneficent drama of the French revolution down to the present hour, our example and our assistance have been invoked.

### SERVICES RENDERED BY AMERICA TO MEDICAL SCIENCE.

I cannot detain you by an enumeration of the services already rendered by America to medical science. Almost immediately after the discovery, important contributions to pharmacology were announced, chiefly from South America, and from the introduction of guaiacum in 1508, until now, these contributions have become more and more frequent. The entire medical world was agitated during the latter half of the seventeenth century by the struggle over the merits of cinchona bark, introduced into Europe in 1640, by Juan del Vego, and no more convincing tribute can be adduced as to the value of medical and sanitary science than the prominent place occupied by malarial diseases in the general and medical literature of the seventeenth and eighteenth centuries as contrasted with the feeling of impunity with which they are now regarded. Among the results which may be anticipated from this meeting is, I trust, the adoption of some well-considered plan for systematic conjoint study of our American remedies and their pharmaceutical preparations, looking to their scientific classification, to greater uniformity in their preparation, and ultimately to a single pharmacopeia for the entire continent.

The introduction of nitrous oxide (1844) and of ether (1846) into medical practice, with which the names of Wells and of Morton are so honorably connected; the establishment of the operation of ovariotomy by McDowell of Kentucky, upon a secure scientific basis—these and hundreds of other achievements of lesser brilliance are too familiar to need mention. Every one knows now how superfluous it is to say a word in defense of American literature, and certainly we who know how powerfully the opinions and practice of medical men in Europe and throughout the world are influenced by American writings may view our position with some complacency. Yet a survey of what America is actually contributing to medical literature shows clearly how far we are behind the nations which lead in medical thought. In the year 1879 Rupprecht's Bibliotheca gave as the total number of new medical books, excluding pamphlets, periodicals and transactions, 419, divided as follows, viz.: France, 187; Germany, 110; England, 43; Italy, 32; United States, 21; all others, 26; and for 1891 I find the same Bibliotheca gives the total number as 1,063, divided as follows, viz.: Germany, 360; France, 243; Great Britain, 141; United States, 80; Italy, 78; Austro-Hungary, 70; Spain, 24; other countries (chiefly Switzerland and Denmark), 67.

On the other hand, in the more ephemeral forms of medical literature the figures are very different. I have had a careful count made of the volumes of medical journals and transactions filed in the library of the Army Medical Museum at Washington with their respective places of publication, and from this it is clear that of these classes of medical literature there were in 1890 and in 1891 published in America (including Canada, the United States and Latin-America) about twice as many volumes as in Germany or France, and fully three times as many as in Great Britain.

Of course we must not forget the fact that in the hurry of our life of to-day many observations and investigations of great value are published in journals, instead of being reserved to become part of more serious and complete volumes. But it will not be doubted, I think, that the great excess of medical journals in America, as contrasted with the comparatively small number of new medical works, is entirely consistent with the admitted leadership of Germany, France, and Great Britain in medical science. The fact that during the past twelve years Germany has risen from a place in this list second to France, 110 as against 187 in 1879, to the first place at present, with 360 new medical works in 1891 as against 243 published in France, speaks eloquently of the strenuous effort with which newly-united Germany is straining forward in science as in other fields. The truth is that the apparently extraordinary number of medical journals in America is due chiefly to a substantial reason, and one which influences equally the existence of very numerous medical schools and medical societies. The vast extent of territory, and the relatively sparse population render it impossible to serve the country with as low an average of medical men, schools, societies, or journals as is possible in more densely-populated countries. As to other and less satisfactory reasons which have operated, especially in the United States, to produce a great growth of ill-equipped medical schools and of poorly-supported new journals it is not necessary to speak here. Indeed, the rapid rise in the standard of scientific requirements, both of medical men and medical literature, and the increasing appreciation on all sides of the fact that the higher medical education is the true interest, both of the profession and of the public, is accomplishing the much-needed work of checking the ill-considered establishment of new medical enterprises, and of stimulating those in existence to more earnest life and more lofty aims.

So true is this in regard to our medical journals, that no one who has occasion to consult regularly the files of any number of them, can fail to be struck forcibly with the steady and decided improvement in the tone of their management and in the scientific quality of their contents.

This Congress meets at a period of peculiar and critical interest in medical education, and I am glad to say that for the first time in the medical history of the United States we may feel proud to have such a meeting convened here, and to invite a close examination of our educational standards and facilities. I should fail in courtesy and in candor alike, were I not to acknowledge the great value of the example which has been so consistently set by Latin-America and by Canada in the maintenance of a high standard of qualifications for medical practitioners.

Fifteen years ago the medical profession of the United States arraigned severely the management of their over-numerous medical schools.[2] While Canada then exacted a reasonably strict entrance examination and a course of medical study extending over four years, with one session of six months in each year, and while every country in Latin-America exacted a collegiate degree or a rigid entrance examination, and a course of medical study extending over six years, it was the general custom with the medical schools of the United States to grant a diploma conveying the full right to practice medicine to applicants who had been admitted without preliminary examination, and had attended without term examinations two courses of lectures covering about five months, and had passed a single and final examination conducted by their own teachers, whose emoluments were derived solely from the fees of such students. This discreditable prostitution of a great educational trust had been gradually brought about by large causes upon which I may not now comment. But it is with justifiable pride that we may point to the admirable and sweeping reforms that have since been instituted. It remains true that the laws of many of the States allow charters for medical schools to be secured without any guarantee of the standard of education that shall be maintained. But the awakened sentiment of the profession and of the community has, in a rapidly increasing number of the States, insisted that medical graduates before being admitted to practice shall pass a State examination conducted by an impartial board of examiners appointed by the governor. The medical schools, to their honor be it proclaimed, have, with few exceptions, been foremost in the struggle to secure this wise and beneficent legislation. They have done much more. In advance of these laws which will ensure a far higher standard of medical qualifications in the States fortunate enough to be so protected, the faculties of a number of the leading schools have forced their standard up at first to three years of obligatory study, and now to four years of eight months' study each, with a carefully graded curriculum and with strict examinations before entrance, at the close of each term, and finally before graduation.

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[2] Regular schools, 65; Homeopathic, 11; Eclectic, 4; total, 80, in 1877.

When we recall that this has been done without the slightest governmental aid; and further that, owing to the prevalent view that medical schools have been sources of large profit to their faculties, the streams of private benefaction had not yet been directed in their favor, you will appreciate the high sense of duty and the devotion to science which have led these faculties to assume greatly increased labors with an expectation of considerably diminished remuneration owing to reduced attendance of students and to augmented expenditures.

The committee of arrangements of this Congress has wisely provided for a tour of inspection of some of these institutions. It is trusted that all of our foreign delegates, and as many as possible of the members of this Congress, will avail themselves of this opportunity to examine the equipment of some of our leading medical schools. They will be gratified to find in hospitals, in laboratories, and in libraries and museums alike, facilities which bear comparison with those of Europe. They will find an arrangement of studies and, above all, an organization for the conduct of daily, thorough bedside instruction in all branches of medicine, which leave little to be desired. It is easy to foresee, as another of the desirable results of such meetings as this held successively in various parts of America, such increased acquaintance with and confidence in our respective methods of medical education and medical treatment as will retain on our continent many of our students and many of our invalids who have been in the habit of going farther to fare no better.

A broad field opens before us for the study, with the aid of collective investigation, of the distribution and course of phthisis and rheumatism and other important diseases as influenced by race and locality. The endemic fevers, other than malarial and typhoid and yellow fevers, which are said to prevail in various parts of North and South America, have long demanded systematic investigation to complete the study which the illustrious Drake began. We shall now have the opportunity of studying, equally by means of collective investigation, the relative effects of various climates on the numerous races now represented in America, and of determining more accurately the scientific and practical questions connected with our extensive series of health resorts, which embrace the finest examples of every type. There are, indeed, none of the Sections provided for in this Congress from whose work more valuable results should follow than from those on medical pedagogies, on hygiene and climatology, and on quarantine. It was a sense of the urgent importance of these latter subjects, especially at the present time, and of the valuable results sure to follow their consideration by such a body as this, which led the government of the United States to extend the cordial invitation which has been uniformly accepted on the part of the Pan-American governments. I feel that by this action there has been secured for the subject of hygiene and State preventive medicine a formal recognition never before accorded on this continent, and one which must surely be followed by the willingness of the respective governments to use their influence to secure the enactment and efficient administration of proper legislation in accordance with the recommendations of this body of eminent experts.

### PROFESSIONAL ORGANIZATION NECESSARY.

When the International Medical Congress met in Philadelphia in 1876, the address on hygiene and preventive medicine, delivered by the distinguished Bowditch, himself a pioneer in sanitary science, was one of the most impressive utterances on that important occasion. The review there given of the work of the previous century in this country in sanitary science was not flattering, but with the fine enthusiasm which marked that gifted man he predicted the immediate opening of the grandest epoch yet seen in the history of medicine. His closing appeal must be quoted: "Our PRESENT DUTY is organization, national, State, municipal and village. From the highest place in the national council down to the smallest village board of health we need organization. With these organizations we can study and often prevent disease." These stirring words were in accord with the spirit of the times and with the developments of science. When the brilliant discoveries of Koch brought to light the specific bacillus of tuberculosis and of cholera, and pointed out the scientific method to be pursued in similar investigations in the future, an unanswerable argument was provided against skepticism or indifferentism or official penuriousness. It required courage and showed rare breadth of view in Lord Palmerston to issue his celebrated reply to the presbytery of Edinburgh on the occasion of the threatened outbreak of cholera in 1853, in which he urged that the weal or woe of mankind so far depends upon the observance or neglect of the natural laws by which the affairs of the world are regulated, that if the local causes of disease were not removed before the return of the hot weather, the pestilence would be sure to return in spite of all the prayers and fastings of a united but inactive nation.

Much was accomplished, it is true, in preventive medicine between 1853 and 1876, when Bowditch spoke, but it is scarcely an exaggeration to say that the progress in the past twenty years has been greater than in the preceding twenty centuries. We have not, indeed, yet detected the specific poison of every infectious disease; even in regard to the familiar and much studied yellow fever, the latest publication of our distinguished Surgeon General, U. S. A., shows that this point is still unsettled. But the position of the whole matter is changed radically. Hypotheses have given way to facts. Every one now knows, or ought to know, that the most dreadful diseases are inseparably connected with definite organisms; that these organisms have special laws of development and distribution; that to destroy or exclude them is to avoid the disease, and that to tolerate conditions which favor their development is to encourage and invite the attack of the disease. When these simple, demonstrable propositions are considered in connection with such scourges as cholera and yellow fever, and typhus and typhoid fever, and scarlatina and diphtheria, and epidemic meningitis, it needs no further argument to prove the value and the necessity of quarantine, and of efficient medical inspection and protection. Nor does it need further argument to show the wisdom of establishing laboratories of hygiene at many points over the country, of equipping them amply with the ablest men and the finest apparatus, and of endowing them liberally, so that the search after the yet unknown causes of disease, and after the best methods to prevent the development of such causes as are known, may be prosecuted with ceaseless vigor.

It is easy now to get a hearing for these views, when public comfort is disturbed, the public purse threatened, and the public conscience awake and sensitive. At this moment our great commercial communities are reposing in confidence upon the sanitary measures adopted by our governments, in accordance with medical advice, for the restriction and exclusion of two dreaded pestilences, cholera and yellow fever. Recall with me the popular terror of last summer. Recall the hideous loss of life and the disastrous effects on commerce caused by former invasions of these diseases when the communities afflicted were smaller and less wealthy than are ours at present. We do not have to seek back to the Middle Ages for pictures of desolation wrought by infectious disease. Recall that tragic story of the great yellow fever epidemic in Philadelphia just one hundred years ago, as told by Rush. Try to estimate the result if cholera had effected a lodgment in New York city in July, 1892, and having found favoring local and climatic conditions, had, as on former occasions, spread its deadly germs to the north and south and west. The fair White City that was rising by that distant lake, under the magic wands of Art and Industry, would have been stricken with a fatal blow. No computation can well exceed the loss that would have fallen on this country. The entire people gazed with bated breath at the struggle waging in New York harbor, and universal thanksgiving arose when the dread invader was finally repulsed by the vigorous and sustained efforts of the sanitary authorities. That we, in America, are not to-day witnessing the aggravated recurrence of the epidemic, in accordance with unvarying precedent, can be due only to the continuance of these same efforts, reinforced with large authority, and aided by more efficient local sanitation. When this gratifying result is associated with the success which for some years has attended our efforts for the exclusion of yellow fever, no further argument can be needed to urge the adoption of such uniform measures as will for the future afford most sure protection against these diseases. These instances exhibit in the most striking manner the need and the value of the international sanitary agreements this Congress may do much to promote. But there will occur to all of us many other important questions to be solved only by earnest and united work. Nor can this work be accomplished until Bowditch's cry for organization is far more fully answered than it has yet been. Nothing but organization and coöperation, and, yet more, the establishment in the government of every civilized nation of a department of public health, will secure the continuous and forcible attention which the magnitude of this enterprise demands. There should be, and the day cannot be far distant when there shall be, in the cabinet of every government here represented, a secretary of public health, of rank, influence, and prerogative equal to that of any other cabinet officer.

Here, then, is the last and greatest service to be rendered to science and to the nation by our Congress. Our combined influence will be irresistible when used in advocacy of higher education; in carrying out large plans for the scientific study of our national life, as affected by social and climatic influences; in the adoption of remedies and remedial measures of demonstrated merit, and in the insistance upon a fuller recognition of the lofty function of preventive medicine. "Salus Sanitasque Reipublicæ, suprema lex." Let us acquire here a closer touch with each other, a deeper faith in our profession and its noble destiny, and a stronger determination to labor in brotherly coöperation for the loftiest ideals of service to science and the race.

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## ADDRESS TO MEMBERS OF THE PAN-AMERICAN MEDICAL CONGRESS.

### BY BRIGADIER GENERAL GEORGE M. STERNBERG,

SURGEON GENERAL U. S. ARMY.
EXECUTIVE PRESIDENT OF THE SECTION ON MILITARY MEDICINE AND SURGERY.
Washington, D. C., Sept. 6th, 1893.

*Gentlemen:*—We are assembled for the purpose of discussing questions relating to military medicine and surgery; to consider what progress has been made in the treatment of camp diseases and of gunshot wounds as a result of recent discoveries relating to the etiology of infectious diseases and of traumatic infections; to profit by the experience of those who have had experience in the care of wounded men upon the field of battle and of the sick of armies engaged in actual warfare; to deliberate as to the best methods of transporting the wounded from the firing line and of rendering them the immediate assistance which may be required to save life; to compare the injuries inflicted by firearms now in use with those which came under our observation when a larger bullet with a much less initial velocity was the missile which caused a majority of the wounds we were called upon to treat.

All of these questions are interesting to us as military surgeons and of vast importance so far as the victims of future wars are concerned. It is true that peace prevails everywhere in the new world; that a most friendly feeling exists among the republics of North and South America; and that the modern way of settling disputes between nations is by arbitration rather than by a resort to arms. But so long as armies exist and deadly weapons are manufactured it will be the duty of the military surgeon to be prepared to render efficient aid to those who fall in battle, and to give the victims of those "camp diseases" which sap the strength of armies the benefit of the most efficacious treatment.

A still more important part of the duty of the medical officer in garrison or in the field consists in the sanitary supervision of the command with which he is serving; for, without doubt, most of the sickness which prevails among soldiers, and especially among new levies of troops, is due to insanitary conditions, and is preventable to a greater or less extent according to circumstances. But the subject of military hygiene does not properly come within the province of this Section, and we simply refer to its importance *en passant.*

We are, however, especially interested in the subject of the transportation of wounded men from the field of battle. And in future wars we will have to meet new conditions, arising from the use of weapons having an extremely long-range and from the nature of the wounds inflicted by bullets of small caliber projected with enormous velocity. Men will be disabled in great numbers within very brief periods of time, and of those struck by these missiles a large portion will require to be promptly removed from the field of action, for a smaller proportion will be killed outright.

Under these circumstances it is evident that our organization for the purpose of rendering first aid to the wounded and transporting them to the field hospitals must be carefully considered, and that the most efficient service will require a corps of assistants especially trained for this duty.

This matter has already received the careful attention of medical officers in the United States army, and we have now an organization designed to perform these duties, with the assistance of "company bearers" who also receive special training with reference to first aid, litter drill, etc. In time of peace our enlisted men of the "hospital corps" perform the duties of nurses, cooks and attendants in post hospitals, and they are regularly drilled in the most approved methods of handling wounded men and removing them from the field of battle.

A manual of drill for the hospital corps has been prepared by a board of medical officers and approved by the secretary of war. It will shortly be published "for the information and government of the army and for the observance of the militia of the United States." A demonstration of the litter and ambulance drills, as directed by this manual, will be made by Major Hoff of the medical department of the army, English speaking secretary of this Section, who was one of the medical officers to whom the duty of preparing the manual was intrusted. After this demonstration I hope we may have a free discussion of the merits of the system, as compared with the older, haphazard way of caring for wounded men which prevailed during our civil war. There are many present whose experience upon the field of battle will enable them to judge of the advantages which are likely to result from system and previous training in handling wounded men; and also as to the practicability of carrying out, upon the firing line, the methods which have been adopted.

The results obtained by our military surgeons during the late war are summarized in the accompanying table, which has been prepared, at my request, by Major Charles Smart, Surgeon U. S. A., from the data on file in the surgeon general's office. The table also shows the number of amputations and excisions made by medical officers of the army since the war and the percentage of mortality from the same. It will be seen that the mortality rate has been considerably reduced. This is no doubt partly due to improved methods of treatment, and especially to antiseptic surgery, although a considerable proportion of the operations made since the war were made before the general adoption of antiseptic methods, or under circumstances which did not admit of the strict application of these methods.

For the purpose of showing the enormous responsibility of the medical department of an army in time of war the following figures are given, showing the total number of cases treated in the armies of the United States during the late war, as given in the "Medical and Surgical History of the War of the Rebellion." The figures relate to white troops only, and are for the period from May 1, 1861 to June 30, 1866:

TABLE SHOWING THE NUMBER OF AMPUTATIONS AND EXCISIONS OF THE EXTREMITIES DURING THE WAR OF THE REBELLION AND THE PERIOD 1866-1891, WITH PERCENTAGES OF MORTALITY.

UPPER EXTREMITY.

| | During the War. | | Since the War. | |
|---|---|---|---|---|
| | Number of Cases. | Percentage of Mortality. | Number of Cases. | Percentage of Mortality. |
| Amputations:— | | | | |
| Shoulder | 852 | 28.5 | 7 | 14.3 |
| Arm | 5,456 | 23.6 | 62 | 19.4 |
| Elbow | 36 | 8.4 | 1 | . . . |
| Forearm | 1,747 | 13.9 | 57 | 8.8 |
| Wrist | 68 | 10.6 | 10 | . . . |
| Fingers, with or without metacarpals | 7,842 | 2.6 | 830 | .1 |
| Total | *16,001 | . . . | 967 | . . . |
| Excisions:— | | | | |
| Clavicle or scapula, partial | 80 | 2.7 | 1 | . . . |
| Shoulder | 885 | 34.8 | 5 | 20.0 |
| Humerus | 696 | 28.5 | 11 | . . . |
| Elbow | 626 | 23.7 | 5 | 20.0 |
| Bones of forearm | 986 | 11.2 | 7 | . . . |
| Wrist | 96 | 15.6 | 1 | . . . |
| In hand | 116 | 8.6 | 22 | 4.5 |
| Total | 3,485 | . . . | 52 | . . . |

LOWER EXTREMITY.

| | During the War. | | Since the War. | |
|---|---|---|---|---|
| | Number of Cases. | Percentage of Mortality. | Number of Cases. | Percentage of Mortality. |
| Amputations:— | | | | |
| Hip | 66 | 83.3 | 4 | 75.0 |
| Thigh | 6,229 | 53.8 | 63 | 41.3 |
| Knee | 189 | 56.6 | 7 | . . . |
| Leg | 5,452 | 32.9 | 87 | 20.7 |
| Ankle | 161 | 25.1 | 21 | 9.5 |
| Partial, of foot | 1,518 | 5.7 | 182 | . . . |
| Total | *13,615 | . . . | 364 | . . . |
| Excisions.— | | | | |
| Hip | 66 | 88.6 | 6 | 33.3 |
| Femur | 175 | 69.4 | 3 | 33.3 |
| Knee | 57 | 81.4 | . . . | . . . |
| Bones of leg | 387 | 28.2 | 6 | 16.7 |
| Ankle | 33 | 29.0 | 3 | . . . |
| Bones of foot | 97 | 19.3 | 6 | . . . |
| Total | 815 | . . . | 24 | . . . |

*In addition to the amputations reported above as performed for gunshot fracture during the war, there were 583 amputations of parts of the lower extremity, with a mortality of 25.5 per cent., and 195 of the upper, with 10 per cent. mortality on account of extensive flesh wounds, in which the fatality was due mainly to shock.

The total number of cases recorded in reports of sick and wounded was 5,825,480, with a total mortality of 166,623. The total number of gunshot wounds was 230,018, with a mortality of 32,907. (The total number killed in battle was 42,724.) The total number of deaths from disease was 157,004, the principal causes of mortality being; typhoid fever 27,056+typho-malarial fever 4,059=31,115; chronic diarrhœa, 27,558; inflammation of lungs, 14,738; consumption, 5,286; small-pox, 4,717; measles, 4,246; acute dysentery, 4,084; chronic dysentery, 3,229; remittent fever, 3,853. No doubt many of the deaths attributed to "remittent fevers" were in fact due to typhoid infection, which in this war, as in many of those which preceded it, proved to be nearly as fatal to the troops engaged as the bullets of the enemy.

No question is more important for the medical officer than that which relates to the prevention of typhoid fever and the various forms of intestinal flux which in the past have caused such enormous losses to armies engaged in active field operations. No doubt a very large proportion of the sickness from these causes could be prevented by the simple prescription—boil all water used for drinking purposes, which does not come from a source that is unquestionably pure.

But the question of the prevention of these camp diseases so destructive to armies, and especially to new levies of troops in warm climates, belongs to the Section on Military Hygiene, and I must restrict myself to topics which come strictly within the province of military medicine and surgery.

I therefore ask your attention for a short time to a subject which has been of great interest to military surgeons in the past but which, in the light of our present knowledge, should be interesting to us rather from an historical than from a therapeutic point of view. I refer to the question of traumatic infections. Hospital gangrene, erysipelas, septicemia and tetanus have no longer the terror for us that they had for our predecessors, for the etiology of these traumatic infectious diseases has been elucidated by researches made during the past fifteen years and, knowing the cause, the proper measures of prevention are apparent and are systematically applied whenever this is practicable.

That the infectious diseases mentioned result from the introduction into wounds of pathogenic bacteria is now definitely settled, and in the case of erysipelas and tetanus we know the specific characters of the parasitic invader which gives rise to these forms of wound infection. But no such demonstration has been made as regards hospital gangrene, probably because bacteriologists have had no opportunities for investigating this disease since the introduction of Koch's admirable methods of research. The writer, while in charge of the surgical wards of a large general hospital at Portsmouth Grove, R. I., in 1862, witnessed a typical epidemic of this disease which served as a lesson never to be forgotten. The two wards devoted to the treatment of surgical cases were filled with wounded men from the Army of the Potomac. A considerable proportion of the cases were simple flesh wounds, progressing favorably to a cure by granulation and cicatrization. Others were of a more serious character and were attended with profuse suppuration. The hospital was favorably located on Narragansett bay; supplies of all kinds were abundant; nurses were in sufficient number and attentive but the medical officer in charge was young and inexperienced. Under his direction the wounds were systematically cleansed and dressed with absorbent lint, etc. Nature seemed to be fully equal to the work of repair, except in those cases where a mistaken conservatism at the field hospital had left compound fractures to her unaided efforts. In such cases profuse suppuration, and septic toxemia sapped the strength of strong men. Possibly it was in such a case that the mischief commenced. Doubtless it was from one or more initial cases that the infection was carried by the sponges of willing but ignorant attendants to a considerable number of wounds which up to this time were progressing rapidly towards cicatrization. The result was a conflagration. Wounds previously healthy became inflamed, painful and angry looking, and within two or three days the cause of this change was apparent. The area of inflammation involving the previously healthy tissues rapidly extended and sloughs formed, sometimes as large as a man's hand and extending deeply among the muscles and along the planes of cellular tissue. Fortunately the infectious nature of the malady was quickly recognized and the measures adopted arrested its progress. It is hardly necessary to say that these measures included the removal of those not yet infected from the overcrowded surgical wards, a general cleaning up, whitewashing of walls, etc., and the necessary precautions relating to the conveyance of infection by sponges, etc. The treatment of the gangrenous wounds consisted in deep cauterization by means of nitric acid applied with a swab, the removal of necrosed tissue as soon as practicable, and the application of charcoal poultices. Goldsmith's bromin treatment had not yet been suggested. Under the treatment adopted the local extension of the disease was promptly arrested, and as soon as the sloughs had separated healthy granulations sprang up and in time repaired the mischief which had so quickly occurred.

This brief account of an epidemic of hospital gangrene witnessed by myself is intended to serve as an introduction to some remarks upon the history and etiology of this affection.

It is altogether probable that it was known to Celsus, who has described a condition of wounds not properly treated, which appears to be identical with the affection known to us as hospital gangrene. Ætius, who wrote in the fifth century, refers briefly to a similar affection. Some of the ancient authors appear to have described the form of wound infection under consideration by the name of "carbuncle." Rolandus, who wrote in the twelfth century, had a chapter in his third book on wounds, entitled "De Carbunculo supervenienti vulneri." Alphonsus Terrus, who, in 1534, published one of the first treatises upon gunshot wounds, was of the opinion that all wounds of this class were poisoned by the gunpowder. He gives an account of the results of such supposed poisoning which makes it appear probable that he encountered hospital gangrene. He recommended the actual cautery as a cure for this condition, and also as a preventive. Ambrose Paré combated the idea that gunshot wounds were poisoned by gunpowder or burned by the ball, and attributed the unhealthy condition into which such wounds were sometimes observed to fall, to a "corrupted state of the atmosphere." He remarks that, owing to this cause, "Nous en sommes devenus sages par l'expèrience de tant de plaies, lesquelles lors que je m éfforcais à les guérir, rendoient une telle et si grande puanteur, indice et temoinage tres certain de pourriture et infection, que les assistans ne la pouvoient sentir qú, a conter cœur, et avec bien grande difficulté."

Paré's treatment of hospital gangrene consisted in the application of an ointment containing pulverized alum, verdigris, and sulphate of copper. It does not appear to have been very successful, as he reports that in many of the wounded in the battle of St. Denis the wounds fell into putrefaction and were accompanied by putrid fever and other serious accidents, and nearly all the wounded died, although their wounds may have been slight and they were supplied with everything necessary for their proper sustenance and treatment. According to Paré the wounds made by swords, pikes and lances became affected with gangrene (les pourritures) as well as those made by firearms.

La Motte, who wrote his "Complete Treatise on Surgery" early in the seventeenth century, gives a very complete account of hospital gangrene. He says: "On prend ce mot" (gangrène), "properment pour un disposition a la mortification qui est ce qu'on appelle vulgairement *pourriture* a l'Hotel Dieu de Paris, laquelle survient et accompagne presque toutes les playes qui sont traités dans cet Hôpital. et la plus grande partie des absces que l'on y ouvre, a cause de l'air corrompu qui y regne et que ces blessez y respirent."

The practice of surgery in a hospital where the opening of an abscess was likely to be followed by rapidly spreading gangrene must have been rather discouraging, and so long as the idea prevailed that this resulted from "a corrupted condition of the air," rather than from direct infection conveyed from wound to wound by instruments, sponges, etc., there was little chance of eradicating the evil.

Ponteau, who wrote in 1783, referring to the prevalence of gangrene in French hospitals, raises the question whether such institutions are not, on the whole, more pernicious than useful to mankind. What would these surgeons of two hundred years ago have thought of our laparotomies for removal of the appendix, etc.; of our operations upon the principal joints; and of the absence of "surgical fever" after serious operations made antiseptically or with aseptic precautions?

Mr. John Bell, in his "Principles of Surgery" published in 1799, says:

> "There is no hospital, however airy or well regulated, where this epidemic ulcer is not found at times." (p. 112). "He must indeed be ignorant who disputes this hospital sore being a general disease of the system; he must have observed very little who does not know it to be absolutely an infection." (p. 117). "Is the surgeon to seek for washings and dressings, use ointments and plasters, and expend butts of wine to cure such a disease? No; let him bear this in mind that no dressings have ever been found to stop this ulcer—but, on the other hand, that out of the circle of the hospital the patients are safe; carry them anywhere, and at any expense, even to a stable or a dunghill." (p. 118).

No doubt this was good advice in the absence of any exact knowledge as to methods of disinfection, for even if the infectious material was destroyed in the wounds by the actual cautery, or by applications of fuming nitric acid, there was always danger of re-infection so long as the patient remained in the infected hospital wards.

The total number of cases of gangrene reported during our civil war, as occurring among the wounded of the Union armies, was 2,642. Of these, four cases occurred in 1861; 223 in 1862; 623 in 1863; 1,611 in 1864, and 135 in 1865. 1,361 cases terminated in recovery, and 1,142 were fatal; but in a considerable number of the fatal cases death was due to the original injury or to other complications—septicemia, hemorrhage, etc.

For details with reference to the principal epidemics of hospital gangrene during the war I must refer to the interesting reports of Acting Assistant Surgeon W. W. Keene, U. S. A.; Surgeon J. H. Brinton, U. S. V.; Surgeon M. Goldsmith, U. S. V.; Assistant Surgeon William Thomson. U. S. A., and others, extracts from which will be found in the third surgical volume of the "Medical and Surgical History of the War."

The facts detailed in these reports correspond with those previously observed in various parts of the world, and show that hospital gangrene is a local disease due usually to the infection of wounds from previous cases.

This brings us to the question as to the origin of the primary cases in an epidemic, a question which is of special interest, not only as regards this disease, but in its bearing upon the etiology of other local infectious processes.

Do epidemics originate *de novo* as a result of an increased pathogenic power on the part of some common putrefactive microörganism, or is there a specific "germ" of hospital gangrene? The former supposition appears to me to be more in consonance with the facts relating to the origin of epidemics, and is sustained by extended experimental researches which show that the pathogenic potency of many bacteria is greatly intensified by cultivation in albuminous fluids and under favorable conditions. This is true of the pus cocci, which may thrive upon the surface of the body of healthy persons or upon mucous surfaces as harmless parasites; but which under favorable conditions may invade the tissues producing acute abscesses, erysipelatous inflammations or gangrenous sloughs, according to the pathogenic potency of the micrococcus and the degree of vital resisting power on the part of the tissues. The streptococcus pyogenes from a malignant case of erysipelas or from the abdominal cavity of an individual who has succumbed to puerperal peritonitis may give rise, when introduced beneath the skin of a healthy person, to the most violent local inflammation and to general septicemia. But if cultivated for a length of time in unfavorable artificial media its pathogenic potency may be so reduced that it gives rise to a local abscess only.

The same has been demonstrated, by experiments upon the lower animals, to be true as regards certain bacteria found in putrefying material. Some of these when injected beneath the skin of a mouse, a rabbit, or a guinea pig, give rise to a rapidly fatal septicemia; others cause an extensive inflammatory œdema in the vicinity of the point of inoculation; still others to a progressive gangrene. By inoculating from animal to animal, the virulence of the pathogenic microörganism inducing these morbid phenomena is increased, so that the smallest fraction of a drop of blood, or of bloody serum from the subcutaneous tissues of an animal recently dead from such an inoculation suffices to kill another animal of the same species within a brief period. But there is another element which influences the result when virulent putrefactive material is introduced beneath the skin of an animal for experimental purposes, or into an open wound by accident, i. e., the vital resisting power of the tissues. The body of a dead animal under favorable conditions of temperature is quickly invaded by putrefactive bacteria. But in the living animal such invasion is successfully resisted in many cases, even when putrefactive bacteria are brought in contact with open wounds. This is especially true as regards carnivorous animals, while the herbivora are especially susceptible to local or general infection when putrefactive material is brought in contact with an open wound. There is also a difference in individual susceptibility in animals of the same race. As a rule, young animals are more susceptible than adults, and susceptibility to infection is increased by depressing influences, such as insufficient food, excessive exertion, bad air from overcrowding or putrid emanations, etc.

It is under such depressing influences that epidemics of hospital gangrene have commonly had their origin. That the disease may originate independently of pre-existing cases seems to be well established by the history of independent outbreaks in distant parts of the country during the war, in new hospitals and among wounded men brought directly from the field of battle.

Billroth, in his "Surgical Letters from the War-hospitals in Weissenburg and Mannheim" (1870), says:

> "While I was at Mannheim but a single case of hospital gangrene occurred. This was in barrack J of the hospital which had been placed under my direction. The medical officer of the day did not recognize the disease and first called my attention to it on the third day. Fortunately no other cases had become infected. I cauterized the wound (a gunshot fracture of the upper arm) with fuming nitric acid and after separation of the slough it was again healthy. In Darmstadt, in the great barrack hospital, two or three cases occurred which were treated the same way and isolated. So far as I am informed this was the end of the trouble."

In discussing the origin of these cases Billroth says:

> "Where did the contagion come from for the one case in Mannheim and for the cases in Darmstadt? That I really cannot say, but I suspect that the infectious material was attached to lint which had been made from hospital linen, or had been scraped in a hospital in which hospital gangrene existed. This suspicion may appear very singular to many physicians, but will serve to show how thoroughly I am convinced of the specific origin of hospital gangrene."

To the writer it appears far more probable that these were cases of the *de novo* origin of gangrene as a result of the introduction into a suppurating wound of saprophytic bacteria which, owing to favoring conditions in the wound itself or to slight resisting power on the part of the tissues, had acquired sufficient pathogenic virulence to enable them to invade living tissues. It may be that there is some particular saprophyte, which is widely distributed, to which this result is commonly due; or it may be that there are a number of putrefactive bacteria which under favorable conditions may acquire this power of invading living tissues. The result is probably due, to some extent, to the development of toxic ptomaines in the secretions of the wound by putrefactive bacteria present in these secretions, which, being absorbed, lower the vital resisting power of the tissues. Deep and profusely suppurating wounds, and especially gunshot fractures of the larger bones, in which pockets and sinuses occur from which it is difficult completely to remove accumulations of pus, furnish the conditions most favorable for the development of such pathogenic virulence as may suffice to make a saprophytic bacillus a facultative parasite.

The greater liability to the development of hospital gangrene in wounds complicated by fracture of bones is shown by the accompanying table, which is taken from the "Medical and Surgical History of the War." (Third Surgical Volume, p. 824.).

It is a remarkable fact that while the larger number of cases occurred in wounds attended with fracture, the greatest mortality resulted in simple flesh wounds.

From our point of view the etiology of hospital gangrene does not differ materially from that of traumatic erysipelas so far as general conditions are concerned, but the two diseases are doubtless due to different microörganisms. That which is the usual cause of erysipelas is now well known to bacteriologists under the name of streptococcus pyogenes, or streptococcus erysipelatos.

SUMMARY OF 2,642 CASES OF GANGRENE, INDICATING THE RESULT AND RELATIVE FREQUENCY.

| Seat of Injury. | Recovery. | Fatal. | Undetermined. | Total. | Per cent. of Fatality. | Per cent. of *Relative* Frequency. |
|---|---|---|---|---|---|---|
| Flesh wounds of head, face, and neck | 5 | 7 | . . | 12 | 58.3 | 60=2.2%. |
| Fractures and penetrating wounds of head, face, and neck | 32 | 16 | . | 48 | 33 3 | |
| Flesh wounds of trunk | 36 | 32 | 7 | 75 | 47.0 | 216=8.2%. |
| Fractures and penetrating wounds of trunk | 44 | 97 | . . | 141 | 68.7 | |
| Flesh wounds of the upper extremities | 47 | 50 | 12 | 109 | 51.5 | 2,366=89.6%. |
| Fractures of the upper extremities | 476 | 245 | 14 | 735 | 33.9 | |
| Flesh wounds of the lower extremities | 125 | 127 | 92 | 344 | 50 3 | |
| Fractures of the lower extremities | 596 | 568 | 14 | 1,178 | 48.7 | |
| Aggregates | 1,361 | 1,142 | 139 | 2,642 | 45.6 | |

Whether hospital gangrene is a specific infection in the same sense that erysipelas is, i. e., an infection due to a specific microörganism has not been determined, but it seems probable that such is the case. It does not follow from this, however, that all cases of these traumatic infectious diseases originate by direct or indirect transfer of the infectious agent from previous cases. Erysipelas does not necessarily result from the introduction of streptococcus pyogenes into an open wound. This streptococcus is frequently found in the pus of acute abscesses unattended with any erysipelatous inflammation. But under favorable conditions it may develop virulent properties, which are manifested especially by a tendency to invade the tissues by way of the lymph channels and along cellular planes, producing a dilation of the capillary vessels and more or less serous effusion, leading often to suppuration and sometimes to necrosis of the invaded tissues. The development of first cases of either disease probably depends upon predisposing causes relating to the individual or his environment. A traumatism is more likely to be followed by erysipelas in a man whose vitality is below par on account of intemperance, insufficient food, bad hygienic surroundings, etc., and the same is true as regards hospital gangrene. Under such conditions the comparatively harmless streptococcus pyogenes may overcome the barriers established by nature to resist invasion by saprophytic bacteria, and having acquired the power to multiply as a parasite in tissues enfeebled by the causes mentioned it soon attains a pathogenic virulence which enables it to invade healthy tissues when transferred by accidental inoculation to another individual.

The view here advanced with reference to the *de novo* origin of erysipelas is supported by the fact that solitary cases frequently occur at remote military posts. Thus during the past year twenty-eight cases are reported as having occurred among the enlisted men of the United States army. Of these eighteen occurred at eighteen different posts, while three posts had two cases each and one post had four.

The facts relating to the etiology of pneumonia correspond with those referred to as relating to that of erysipelas. In this disease, also, the specific cause has been shown to be a micrococcus (Mic. pneumoniæ crouposæ) which is frequently found in the salivary secretions of healthy persons, and which varies greatly as to its pathogenic virulence. Solitary cases of the disease occur at our military posts, as elsewhere, as a result, no doubt, of predisposing and exciting causes which give the specific cause the mastery over the resources provided by nature for resisting the local infection which constitutes the disease in question.

The total number of cases of traumatic erysipelas reported as occurring in the armies of the United States during the war was 1,097, with a mortality of 41 per cent.

The micrococcus which is now recognized as the usual cause of erysipelatous inflammations is capable of growing either in the presence or absence of oxygen; i.e., it is an aërobic and facultative anaërobic microörganism. We infer that the same is true as regards the microörganism which produces hospital gangrene. But in the case of tetanus, which has been proved by recent researches to be an infectious malady due to a bacillus widely distributed in the superficial layers of the soil, it has been shown that this bacillus is a strict anaërobic. It does not grow in the presence of oxygen and could not thrive in superficial wounds. This probably accounts for the fact that epidemics of tetanus are not common. The cases which occur are for the most part sporadic cases, due in each instance to infection, resulting from the introduction of surface soil or dust containing the tetanus bacillus. Such material in an open wound might be innocuous. But introduced into the depths of a gunshot wound, into a closed amputation wound, or into a punctured wound made by a rusty nail, for example, the tetanus bacilli (spores) present find the conditions favorable for development and this fatal infectious malady results.

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The same statement applies to the considerable number of cases reported under the heading pyemia. It seems probable that of the 2,818 cases reported under this heading a large proportion were in fact cases of septicemia resulting from wound infection. The very great mortality, and the results of post-mortem examinations made, indicate this; but as it was before the days of bacteriological research there is no direct evidence on record showing the presence of bacteria in the blood and in the metastatic abscesses found in the lungs, the liver, the kidneys, spleen or joints in those cases in which an autopsy was made. Doubtless septic toxemia occurred in numerous cases but, as stated, we infer that a majority of the cases reported under the heading pyemia were in fact cases of septicemia resulting from infection through the wound, by the pathogenic micrococci which are commonly concerned in this form of "blood poisoning," and especially by staphylococcus aureus. The mortality in the class of cases under consideration exceeded 97 per cent. Out of the total number of deaths (2,747) but twenty-one are reported to have resulted from other complications,—viz., hemorrhage seven, gangrene six, tetanus two, erysipelas one, peritonitis one, and typhoid pneumonia four.

One of the questions to be settled by the military surgeon in the next great war, which we earnestly hope will not occur on this continent, is to what extent the large mortality which has heretofore occurred from traumatic infections can be prevented by antiseptic methods of treatment. Certainly there will be no excuse for the occurrence of septicemia after amputations, or for the appearance of erysipelas or hospital gangrene in wounds made by the knife of the surgeon. But how far it may be practicable to prevent such complications in gunshot fractures remains to be seen, and the proper treatment of such injuries is an important point for consideration. If such cases could at once receive skillful surgical treatment, including the removal of splinters, foreign substances carried into the wound by the bullet, and antiseptic dressings, no doubt many would be saved without loss of life or limb. But the changing fortunes of the battlefield often make it impossible for medical officers to give such prompt attention to the wounded. It is generally conceded that on the firing line nothing more should be attempted than the arrest of hemorrhage, and such support to the fractured limb as will enable the wounded man to bear transportation to the field hospital with the least possible suffering. It is here that the fate of the unfortunate victim of war will often be decided, and the responsibility resting upon the military surgeon under such circumstances cannot be overestimated. His decision with reference to operative interference must be prompt, and will often be governed by circumstances other than those laid down in surgical textbooks. How far must the man be transported before he will reach a resting place at a permanent hospital? What are the means of transportation? Is he to be left at the mercy of the enemy as a prisoner of war? Shall his case be passed by because of others more urgently requiring attention? Many a leg must be sacrificed which might be saved under more favorable conditions, and conservative surgery must often yield before the inexorable contingencies of the battlefield.

In future wars the question will be decided as to the propriety of performing laparotomy at the field hospital in penetrating wounds of the abdomen, for the purpose of exploration, and suturing the intestine if it is found to be wounded. This is so important a question that I have attempted to make it the most prominent surgical topic for discussion at the present meeting, and trust that as a result of this discussion we may arrive at definite conclusions as to what our action should be if called upon to treat such cases.

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GENTLEMEN:—The work of this Section is of a character which does not usually form a prominent part in the proceedings of medical gatherings.

In almost any department of education, pedagogy or the science of teaching is a recognized specialty. The rapid progress which has been made in medical education in this country within the last few years has brought about such profound changes in methods of instruction, and the strides which medical science is making all over the civilized globe are bringing into view so many new fields of work, that the teachers of to-day have a far more complex and difficult task than was presented to their predecessors. The art of teaching medicine has not been taught, in this country at least; the time has arrived to take up the subject.

In introducing such a subject as this, it seems appropriate to take a brief retrospective glance at the history of medical education in this country.

There lies before me as I write, a quaint little volume entitled, "A Discourse upon the Institutions of Medical Schools in America," published in 1765. It bears the following inscription:

"To Doctor John Warren, Physician in Boston, This Copy is presented by his respectful and affectionate Friend, John Morgan, Philad'a, Feb. 27, 1783." This book may be safely regarded as the first contribution to the subject which we are to discuss to-day and the two dates are memorable; the former indicating the foundation of the medical department of the University of Pennsylvania, and the latter the birth of the medical department of Harvard University.

Dr. Morgan justly remarks that "medicine is a science as important in its object as it is difficult in the acquisition. It is very extensive in its researches and presupposes the knowledge of many other sciences. The cultivation of it requires no small abilities, and demands of those who engage in the arduous pursuit an enlarged and benevolent mind."

It is interesting to note that one whom we might justly look upon as the father of medical education in this country and who "had spent five years in Europe under the most celebrated master in every branch of medicine," should have taken so optimistic a view of the knowledge of medicine at that time as to say: "The industry of many centuries has already been employed to bring Physic to that degree of perfection at which it is, now arrived." Fortunately he adds: "It will still require a long time to remove the obscurities which yet veil many parts of it."

Three years after this book was written, Pennsylvania held her first medical commencement and the provost justly remarked: "This may be considered the birthday of medical honors in America."

The men who started this movement had received much encouragement from across the ocean and the remark of one of their teachers, Dr. John Fothergill of London, is of special interest to those concerned in the work of this congress. Writing to James Pemberton in 1762 he recommends Drs. Shippen and Morgan as men well qualified for the work of teachers, "both of whom," he says, "will not only be useful to the province in their employment but if suitably countenanced by the legislature will be able to erect a school of physic among you that may draw students from various parts of America and the West Indies."

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When the medical school sprang into existence it was at first intended merely to supplement the apprentice system, and as means of communication of one part of the country with another were exceedingly limited it was found desirable to concentrate school work into as small a part of the year as possible. Hence the origin of the short term of four months which has clung so persistently to the American system.

I will not undertake to weary you with a detailed account of the history of the development of our system of education. Suffice it to say that the close of the century found schools established not only in Pennsylvania and Massachusetts but in New York, Maryland and Vermont. There were, however, in 1810 only five medical schools in existence with an aggregate number of medical students of about 650, of whom 100 received the degree either of bachelor or doctor of medicine. The bachelor's degree was given to those who had attended one full course of college instruction. It was hoped that such students after a short period of practice would eventually return to take the higher degree, but as this expectation was not fulfilled the degree of bachelor of medicine was soon wisely abolished.

A noticeable feature of the education of that early period in our medical history were the requirements for a high standard of general education. Those students who did not possess a college degree were expected to pass an examination in Latin, mathematics and "Natural and Experimental Philosophy."

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"Under these influences the first thirty years sufficed to cause the bachelor's degree to be abandoned by all the schools, the number of professors in each school to be double, and the length of the annual college term to be shortened one-third." (Davis.)

Such was the standard of education with which the present century opened. New schools continued to be created, not infrequently in connection with some university, as in 1810 at Yale University, in 1817 in Lexington, Ky., in 1820 at Brunswick, Me., in 1825 at Charlottesville, Virginia, until in 1840 twenty-six new medical colleges had been added to the list, the whole number of students in the country amounting to 2,500, the population in that year being 17,069,453.

A glance at the report of a committee to the Medical Society of the State of New York in 1833, gives a good idea of the amount of work done by the schools at that period.

In the twenty schools mentioned in this report the number of courses of lectures required was two, with one exception—that of the University of Virginia, where three courses were required; and to the credit of this university be it said, the length of each course was ten months, whereas, the almost invariable custom of the other schools was to give a course of four months' duration only. The time of study purported, however, to be in all cases three years, "including the time devoted to lectures," as is stated in most of the reports. This straw indicates that at that time the chief dependence, or nearly so, was placed upon the extra-mural instruction which was given to the student. At Yale University there was this additional requirement, namely, that the student was required to study four years, "if he had not graduated," which phrase, I presume, means if he had not already taken the academic degree. This seems to be the first intimation that a longer term than the standard then set was necessary for a complete equipment for the practice of medicine.

The Medical Institution of the State of Georgia (incorporated in 1828) gave at first the bachelor's degree with one year of study, but immediately abandoned it for the usual curriculum.

In the University of Pennsylvania, to which we look for the standard in these early, as well as later days, two full courses were required, but as in many other schools one course only was demanded from those who had attended a course at some other reputable school. In addition, a course of clinical instruction in one of the Philadelphia hospitals was required.

The course was then three years in length, but as each course of lectures lasted only four months, it was expected that during the remaining portion of the first two years the student should receive private instruction.

As the period of the school term was so short, it is interesting to note at what time of the year the various courses of lectures began.

This, it will be seen, varied greatly according to the geographical position of the institution. At Dartmouth and the University of Vermont the term began in August. In Bowdoin College, Maine, however, it began in the middle of July, continuing until the middle of May that is, the term-time in the far north was in the summer or spring.

At Yale and Harvard and in Philadelphia and New York the term opened at the end of October or the beginning of November, as did also the schools in North Carolina and Kentucky. The University of Virginia, with its long course of ten months, began September 10.

Although the term time was exceedingly short in some schools a large amount of work was crowded into the daily routine of the students. Five or six systematic lectures a day, with attendance on clinics and dissections when possible, was considered nothing more than a fair amount of work for the medical student to digest properly.

This system of teaching remained practically unaltered in 1851, if we may judge from a report to the Committee on Medical Education of the American Medical Association.[3] In regard to the private instruction which was supposed to continue during the remaining eight months of the year, the report states that a very large proportion of students simply read medicine under the direction of their preceptors. Anything like careful instruction upon the part of the teachers did not exist. The student neither while attending lectures nor while in his preceptor's office was encouraged in anything like faithful and rigid study. To remedy the defect, private schools for teaching medicine were founded by enterprising physicians and surgeons and these quiz classes which were then inaugurated, became a prominent feature of the national system of teaching. Many a distinguished professor has first won his spurs at these private schools, and many valuable experiments in medical education were carried on by these men. As the college term has lengthened, the necessity for these accessory courses has diminished, and in many cities the extra-mural instruction, whether by private school or by teacher, has passed into history. No one will, I presume, regret the departure of the year of private teaching, "by some respectable practitioner," whose certificate, purchased by a handsome fee, came eventually to have so little meaning. When this custom was first inaugurated it was the sole method of inspection, and during the long period of apprenticeship the student received a large amount of instruction of the most valuable sort. When the medical school came into existence the attempt was made to combine the two systems. The practitioner, relieved from the responsibilities of giving a complete course of study to the student, gradually relaxed his efforts as a teacher until this part of his daily work came to have only a nominal value.

According to Davis it consisted in 1877 in little more than the registry of the student's name in the doctor's office, permission to read the books of his library or not, as he chose, and the giving of a certificate of time of study for the student to take to the medical college where he expected to graduate.

At the beginning of this century the successful practitioner gave a prominent place in his household to the medical student. I have often heard my father and many other practitioners of his day tell stories of the school life of those times. The office in the old homestead where I began the practice of medicine, then a luxurious library, was in those times a plain room with a sanded floor, occupied during the day by a small band of medical students who all boarded in the same house. The old room was the scene of many amusing stories of schoolboy life, and also of thrilling tales of escape from the indignant pursuer, by the hero of some graveyard scrape which was rendered necessary by the peculiar laws of that period. This phase of student life has long since passed away and the equally agreeable and far more profitable experience of hospital life has taken its place. Would that I could add that such hospital experience was now the privilege of every medical student in the land.

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[3] W. Hooker, M.D. 1851.

As we approach the middle of the century, we find the nation growing rapidly in population and prosperity, and a corresponding increase in the numbers and activity of the medical profession. From 1830 to 1845 the number of medical schools in the United States had more than doubled.

At a meeting of the Medical Society of the State of New York in 1839, when the subject of medical education was brought forward, it was proposed to hold a national medical convention the following year in Philadelphia, consisting of representatives from the different schools and State societies. No response was made to the action of this society, but in 1844 Dr. N. S. Davis, then a delegate from Broome county, New York, offered a resolution that a national convention be called in 1846, and the American Medical Association thus sprang into existence, the fundamental idea, which brought about the formation of the association, being the improvement of our system of medical education.

It was high time that some such movement should take place, as the rapid increase of the number of medical schools brought with it a constant increase in the laxity of methods of teaching.

The equipment of a new school was sometimes pathetic in its meagerness—a mannikin and a few lecture rooms constituting the entire "plant" of the infant institution. It would not do to question the dean too curiously about the clinical facilities which the school enjoyed; and as for laboratory work there were few teachers sufficiently advanced in their ideas to think of criticising the absence of such instruction. There was, indeed, no time for it. Every available space in the tabular view was filled with lecture hours. Professors were asked to come from neighboring towns to assist in teaching, and often gave two lectures in the same day. This cramming process, which seems so peculiarly American in its hustling activity, is perpetuated to the present day in a limited number of schools, chiefly those situated far from medical centers. As Oliver Wendell Holmes has said, life at that time was cheap; medical visits in the country were worth only twenty-five cents apiece, and the ambitious student could not afford to make an expensive outlay for his future work.

The American Medical Association therefore justly put on record its opinion, "that the abuses which exist in the modes of medical education pursued in this country demand the serious consideration of the profession," and at each meeting it continued to sound a note of warning on this all-important subject.

One of the principal reforms which it proposed to bring about was the lengthening of the term of each year from four to six months, and you will doubtless be somewhat surprised to hear that at the second meeting of the Association, which was held in Boston, a paper was presented from the faculty of Harvard University opposing this proposition.

*Tempora mutantur et nos mutamur in illis.*

If Harvard was unwilling to lead in the matter of reform at that time, it is not surprising that the other schools should not have been persuaded to change their customs. To the Chicago Medical College—which was founded in 1859—must be given the credit of having been the first to attempt to lengthen the college course and to establish the system of teaching upon the so-called graded plan.[4] The school was in fact organized for this express purpose.

Little change was, however, effected by the Association in the methods of teaching at that time, although the discussions which were constantly held were destined eventually to bring forth good fruit. During the following decade little was done in the way of reform.

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Several of my friends proposed accordingly, after leaving Philadelphia in March to take a spring "year" at another school, in accordance with a custom which many at that time followed. Such a student was therefore able on July 1st to show to the examining body, tickets for two full courses of lectures and a letter testifying to private instruction. It was notorious that many students at that time were able to obtain a degree after nine months only of medical study. The custom of short courses of study at different periods of the year unfortunately still prevails. This zodiacal paradox has not yet been fully eliminated from the medical calendar. The condilittle of what we now consider the foundation of medical education there was to teach—such a course cannot be regarded as a very complete and exacting one.

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[4] N. S. Davis. Contributions to the History of Med. Ed., etc., 1877.

"Under these influences the first thirty years sufficed to cause the bachelor's degree to be abandoned by all the schools, the number of professors in each school to be double, and the length of the annual college term to be shortened one-third." (Davis.)

Such was the standard of education with which the present century opened. New schools continued to be created, not infrequently in connection with some university, as in 1810 at Yale University, in 1817 in Lexington, Ky., in 1820 at Brunswick, Me., in 1825 at Charlottesville, Virginia, until in 1840 twenty-six new medical colleges had been added to the list, the whole number of students in the country amounting to 2,500, the population in that year being 17,069,453.

A glance at the report of a committee to the Medical Society of the State of New York in 1833, gives a good idea of the amount of work done by the schools at that period.

In the twenty schools mentioned in this report the number of courses of lectures required was two, with one exception—that of the University of Virginia, where three courses were required; and to the credit of this university be it said, the length of each course was ten months, whereas, the almost invariable custom of the other schools was to give a course of four months' duration only. The time of study purported, however, to be in all cases three years, "including the time devoted to lectures," as is stated in most of the reports. This straw indicates that at that time the chief dependence, or nearly so, was placed upon the extra-mural instruction which was given to the student. At Yale University there was this additional requirement, namely, that the student was required to study four years, "if he had not graduated," which phrase, I presume, means if he had not already taken the academic degree. This seems to be the first intimation that a longer term than the standard then set was necessary for a complete equipment for the practice of medicine.

The Medical Institution of the State of Georgia (incorporated in 1828) gave at first the bachelor's degree with one year of study, but immediately abandoned it for the usual curriculum.

In the University of Pennsylvania, to which we look for the standard in these early, as well as later days, two full courses were required, but as in many other schools one course only was demanded from those who had attended a course at some other reputable school. In addition, a course of clinical instruction in one of the Philadelphia hospitals was required.

The course was then three years in length, but as each course of lectures lasted only four months, it was expected that during the remaining portion of the first two years the student should receive private instruction.

As the period of the school term was so short, it is interesting to note at what time of the year the various courses of lectures began.

This, it will be seen, varied greatly according to the geographical position of the institution. At Dartmouth and the University of Vermont the term began in August. In Bowdoin College, Maine, however, it began in the middle of July, continuing until the middle of May that is, the term time in the far north was in the summer or spring.

At Yale and Harvard and in Philadelphia and New York the term opened at the end of October or the beginning of November, as did also the schools in North Carolina and Kentucky. The University of Virginia, with its long course of ten months, began September 10.

Although the term time was exceedingly short in some schools a large amount of work was crowded into the daily routine of the students. Five or six systematic lectures a day, with attendance on clinics and dissections when possible, was considered nothing more than a fair amount of work for the medical student to digest properly.

This system of teaching remained practically unaltered in 1851, if we may judge from a report to the Committee on Medical Education of the American Medical Association.[3] In regard to the private instruction which was supposed to continue during the remaining eight months of the year, the report states that a very large proportion of students simply read medicine under the direction of their preceptors. Anything like careful instruction upon the part of the teachers did not exist. The student neither while attending lectures nor while in his preceptor's office was encouraged in anything like faithful and rigid study. To remedy the defect, private schools for teaching medicine were founded by enterprising physicians and surgeons and these quiz classes which were then inaugurated, became a prominent feature of the national system of teaching. Many a distinguished professor has first won his spurs at these private schools, and many valuable experiments in medical education were carried on by these men. As the college term has lengthened, the necessity for these accessory courses has diminished, and in many cities the extra-mural instruction, whether by private school or by teacher, has passed into history. No one will, I presume, regret the departure of the year of private teaching, "by some respectable practitioner," whose certificate, purchased by a handsome fee, came eventually to have so little meaning. When this custom was first inaugurated it was the sole method of inspection, and during the long period of apprenticeship the student received a large amount of instruction of the most valuable sort. When the medical school came into existence the attempt was made to combine the two systems. The practitioner, relieved from the responsibilities of giving a complete course of study to the student, gradually relaxed his efforts as a teacher until this part of his daily work came to have only a nominal value.

According to Davis it consisted in 1877 in little more than the registry of the student's name in the doctor's office, permission to read the books of his library or not, as he chose, and the giving of a certificate of time of study for the student to take to the medical college where he expected to graduate.

At the beginning of this century the successful practitioner gave a prominent place in his household to the medical student. I have often heard my father and many other practitioners of his day tell stories of the school life of those times. The office in the old homestead where I began the practice of medicine, then a luxurious library, was in those times a plain room with a sanded floor, occupied during the day by a small band of medical students who all boarded in the same house. The old room was the scene of many amusing stories of schoolboy life, and also of thrilling tales of escape from the indignant pursuer, by the hero of some graveyard scrape which was rendered necessary by the peculiar laws of that period. This phase of student life has long since passed away and the equally agreeable and far more profitable experience of hospital life has taken its place. Would that I could add that such hospital experience was now the privilege of every medical student in the land.

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[3] W. Hooker, M.D. 1851.

As we approach the middle of the century, we find the nation growing rapidly in population and prosperity, and a corresponding increase in the numbers and activity of the medical profession. From 1830 to 1845 the number of medical schools in the United States had more than doubled.

At a meeting of the Medical Society of the State of New York in 1839, when the subject of medical education was brought forward, it was proposed to hold a national medical convention the following year in Philadelphia, consisting of representatives from the different schools and State societies. No response was made to the action of this society, but in 1844 Dr. N. S. Davis, then a delegate from Broome county, New York, offered a resolution that a national convention be called in 1846, and the American Medical Association thus sprang into existence, the fundamental idea, which brought about the formation of the association, being the improvement of our system of medical education.

It was high time that some such movement should take place, as the rapid increase of the number of medical schools brought with it a constant increase in the laxity of methods of teaching.

The equipment of a new school was sometimes pathetic in its meagerness—a mannikin and a few lecture rooms constituting the entire "plant" of the infant institution. It would not do to question the dean too curiously about the clinical facilities which the school enjoyed; and as for laboratory work there were few teachers sufficiently advanced in their ideas to think of criticising the absence of such instruction. There was, indeed, no time for it. Every available space in the tabular view was filled with lecture hours. Professors were asked to come from neighboring towns to assist in teaching, and often gave two lectures in the same day. This cramming process, which seems so peculiarly American in its hustling activity, is perpetuated to the present day in a limited number of schools, chiefly those situated far from medical centers. As Oliver Wendell Holmes has said, life at that time was cheap; medical visits in the country were worth only twenty-five cents apiece, and the ambitious student could not afford to make an expensive outlay for his future work.

The American Medical Association therefore justly put on record its opinion, "that the abuses which exist in the modes of medical education pursued in this country demand the serious consideration of the profession," and at each meeting it continued to sound a note of warning on this all-important subject.

One of the principal reforms which it proposed to bring about was the lengthening of the term of each year from four to six months, and you will doubtless be somewhat surprised to hear that at the second meeting of the Association, which was held in Boston, a paper was presented from the faculty of Harvard University opposing this proposition.

Tempora mutantur et nos mutamur in illis.

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[1] N. S. Davis. Contributions to the History of Med. Ed., etc., 1877.

It is not surprising that the best class of students were dissatisfied with the opportunities, and that the number of those who found it necessary to go to Europe to complete their education was constantly increasing. Two and even three years of study was not considered too long a time to occupy in this manner. It is true that spring terms of a supplementary nature were organized by most schools, and those students who chose to remain could receive instruction throughout the year. The majority of students, however, disappeared, many of them employing their time in other occupations to earn sufficient money to pay for a second course of lectures. The class of individuals who studied medicine at that time seemed far inferior to the medical student of to-day in culture and refinement. President Eliot says of the *medical students of that period*: "*In this university*, until the reformation of the school in 1870-71, the medical students were noticeably inferior in bearing, manners and discipline to the students of the other departments; they are now (1888) indistinguishable from other students."

The date which I have just mentioned marks the era of a great change in the history of medical education. The rising generation of teachers were not content with the antiquated methods of a previous century; they had learned of a new order of things in the centers of medical learning in Europe. As the old generation of teachers went out and a new one came in, the modern ways of teaching grew into a substantial system which had come to stay. Harvard adopted the graded course of three years' study, but she did also far more than that—and in this respect she stands in advance of almost every other school in the country—she lengthened her course to nine months, so that her two terms correspond with those of the other departments of the university and represent a full year's work.

I will not undertake to record the history of the reform in medical education since that time; it is familiar to most of you. The example which has been set to the rest of the country by the University of Pennsylvania and by the College of Physicians and Surgeons of New York is too well known for me to repeat them here.

While criticising, as I have done, the work of a previous generation, I ought to remind you that our forefathers accomplished what they did only by individual efforts. There were no governments, and as a rule no liberal benefactors to back them in their undertakings. Their schools had to be conducted on business principles, with a keen eye to the practical success of their venture. During the past twenty years, it is true, a number of State universities have been established. In the University of Michigan, and possibly in one or two other State universities, the medical professorships like those of other departments, are sustained by the income from the general endowment, independent of fees derived from medical students; but, as a rule, the success of the school has depended upon the patronage which it has received. It may be justly said, therefore, that the whole system of medical education in this country is the spontaneous outgrowth of the work of the medical profession, and that it is due to their public spirit and disinterestedness that so important a department in the educational development of a great nation has been brought to its present state of excellence.

The good work has, however, but just begun. The reform of medical education is still in its infancy. If we are to believe all the glowing announcements which we read in the annual catalogues of the various schools, we might be lulled into a sense of calm security for the future; but, unfortunately, the actual practice of many, I might say a majority, of the schools does not come up to the ideals which are here set forth.

The essential points in the new scheme of education have been well stated by our President, Dr. Pepper:[5]

1. The establishment of a preparatory examination.
2. The lengthening of the period of study to at least three full years.
3. The careful grading of courses.
4. *The introduction of ample clinical and laboratory* instruction.
5. The establishment of fixed salaries for the teachers.

In a general way we may obtain some notion of the improvement which has been made by a study of the report of the Illinois State Board of Health for 1891. According to this report there are now 148 medical schools of all kinds in the United States and Canada. The number of those requiring certain educational qualifications for matriculation is 129.

The number of schools requiring attendance on three or more courses of lectures was, in 1882, twenty-two. In 1891 the number was eighty-five.

There has been also a gradual increase in the duration of the lecture terms from an average of 23.5 weeks in 1882–83 to 26.3 weeks in 1890–91. In 1882–83 there were eight colleges that had but sixteen weeks; the number of colleges having terms of six months or more is now 111. The number of colleges which have graduated students at the end of the second course of lectures the present year is less than 10 per cent. of the whole number of schools in the country.

There are now in the United States thirty-two examining and licensing bodies that do not give instruction. Although the work of these licensing boards is far from uniform, a great deal has been accomplished by them. There are at the present time fifteen States with Practice acts that require an examination of all persons desiring to practice medicine in the respective commonwealths. These States include nearly 50 per cent. of the entire population. In many States the whole complexion of the medical practice has been changed by the clarifying influences of these bodies. The reports on medical education by the Illinois board, I do not hesitate to say, have exerted a more powerful influence on the movement in education than any other publication which our medical literature has produced.

The effects of these Medical Practice acts which establish a minimum of time spent at medical lectures and provide an examination for those who wish to become practitioners, are shown in the statistics which have just been given. At the present time State examinations are required in Minnesota, North *Dakota*, *Montana*, *Washington*, North Carolina, Alabama, Florida, Virginia, New Jersey, New York, Nebraska, Maryland and Utah.[6]

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[5] Introductory Address, Philadelphia, 1877.

[6] Millard. "The Necessity and Best Methods of Regulating the Practice of Medicine." Journal Amer. Med. Ass'n., July 30, 1892.

Millard, who has had experience in framing the act of Minnesota, believes that it would be an improvement upon the Medical Practice acts at present in existence, to separate the two functions of the board, the licensing power and the educational supervision. He thinks that the best interests of the public will be observed by assigning the duties of the State licensing power to the various State Boards of Health. The regulation of all forms of education should, on the other hand, be vested in a central power consisting of a single board, to be known as a State Bureau of Education, with power to regulate all educational institutions granting degrees, together with the power of granting charters and revoking the same; particularly should this apply to all institutions wishing to afford the community any of the various forms of higher or special education.

Having thus sketched the progress of medical education up to the present time, let us now glance at some features of the present system in which it is desirable that further improvement should be made.

The importance of a preliminary training for the study of medicine is a problem which has occupied the attention of our most prominent teachers. That the medical student should have received a fair amount of education goes without saying. The importance of a proper preliminary education is thus forcibly stated by that most experienced of German teachers, Professor Billroth. He says in reply to the objection to a preliminary study of the natural sciences as a basis of a medical education:

> "The educated of all nations should not fail to encourage to their utmost, knowledge and study—in all countries and stations of life they should not fail to maintain the standard which they have set up, both for themselves and others; they should not fail to support the government in all efforts directed towards this end.
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> "The physician, the lawyer, the school teacher and the clergyman form the nucleus of culture in the community; they are, especially in the country or small towns, the representatives of the educated element of society. The people seek their advice in time of need, and they are their sole source of knowledge in many things.
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> "To neglect the education of such persons, to lower their mental and scientific standard, to bring them up so that they know no better education than the tradesman, the tailor and the cobbler, would be, in my opinion, the suppression of the educational development of a nation and is a policy both corruptible and immoral in principle, as it would inevitably ruin a nation and bring it prematurely to that point of decadence where it would become the prey of others."

The importance of these views is fully appreciated in Germany, where the professional schools are integral parts of the university, and entrance to the professional schools depends upon the previous completion of the course in philosophy, a course which corresponds to that of our academic degree.

In Dr. Holmes' suggestive article[7] on this subject it is shown that while the increase in the total number of medical students has been very great during the last decade, the increase in the number of "college men" who have entered the profession has been very slight, and in some of the more prominent schools the percentage has even slightly diminished. The author says: "It can not then be doubted that relatively a smaller number of medical students have a bachelor's degree than in 1880, though the education of the average medical student is superior to the average medical student ten years ago." Although the proportion of medical students to students of law and divinity is greater in the United States, the relative proportion has diminished in the last ten years, whereas in Germany in the same period, a period during which medicine has become more of a science and the domain of surgery has increased under antiseptic methods, the proportion of medical students to the students of other professions has greatly increased. The reason for this variation in the proportion of students in the two countries is explained by the imperfection of our system of education. Educators have not had proper control and medicine has not been placed upon that dignified scientific basis which it enjoys in Germany. Dr. Holmes complains that the medical department is neglected by every university in the United States. "It is farmed out or left to shift for itself."

Harvard has recently made an attempt to overcome the difficulty by a modification of the academic course. As Welch points out in an article on this subject:[8] If a young man choose the medical profession he should devote at least four years to medical studies, including the preliminary sciences. If he supplements this with a year in a hospital and a year or two in study abroad, and all this work has been preceded by a college academic course, he would not be able to enter upon the practice of his profession much before the age of thirty.

Dr. H. P. Bowditch,[9] dean of the Medical Faculty of Harvard, has strongly advocated a change which would overcome this difficulty. The average age of students who enter the Harvard academic department, as President Eliot has shown, has been gradually rising during the whole of this century until it has reached nearly nineteen years. The student who enters the medical school therefore finds himself just beginning the preparation of the real work of his life at an age when many of his contemporaries are already engaged in the productive work of their professions. In Germany the best class of students begin their professional studies at a little earlier age than that at which our young men enter Harvard College. As the course of study leading to the degree of doctor of medicine lasts five years, it follows that the German physician is ready to begin practice before he is 23½ years old.

The average age of matriculants at Oxford is 19 years, and it is perfectly possible for an Oxford student desiring to study medicine to begin his purely professional studies before the end of his second year of college life. The dean writes me upon this subject as follows:

> "There are many students in our school who have had one or two years of college life either as special or regular students, and these have entered the medical school because they have felt the necessity of getting started in their life work. These men would have been glad to take the A.B. degree if it could have been procured in a shorter time, but they consider it too dearly purchased when it involves so much delay in beginning their professional life."

It seemed, therefore, reasonable to the medical faculty of Harvard to make the following proposition, namely, that the academic council should consider the expediency of granting the degree of A.B. to all undergraduates who should subsequently take the longest course of study offered at the professional school after three years' attendance in the academic department—the professional degree and that of A.B. to be given simultaneously at the end of the professional course. One of the medical studies at least can be obtained in the usual college curriculum, and general chemistry is frequently "anticipated" by students who enter the medical school. It is hoped, indeed, that this course will soon become one of the "preliminary studies" to medicine. It would be a short step to place one or two more of the scientific medical studies on the list of academic electives, and a whole year could be thus anticipated. The relations of professional schools to the university are not appreciated in the same light that they are in Germany, and the proposition of the medical faculty after much discussion was finally declined. The advantages of a more intimate relation between the medical school and the university are clearly set forth by Welch in the article referred to. The duplication of laboratories is thus avoided, and men of different branches of sciences are brought more intimately together. The important departments of botany, zoölogy, and comparative anatomy cannot fail to have an elevating influence upon the work done in a medical school. How much more rapidly might not original investigation progress when different branches of science work in a common cause. It is here that the great strength of German science and progress takes its origin.

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[7] "The Forthcoming Report of the Bureau of Education on Professional Education in the United States," Jour. Amer. Med. Ass'n., January 14, 1893.

[8] Some of the advantages of the union of Medical School and University. 1888.

[9] Remarks made at a meeting of the Academic Council, 1887.

A movement in the same direction is the establishment in our colleges and scientific schools of courses of tuition, intended specially for the benefit of those who intend ultimately to study medicine. Such a course has been planned by Prof. Shaler in the Scientific School of Harvard, and a similar course is offered by the Institute of Technology.

Professor Shaler's course preparatory to medicine consists of two years. In the first year we find physics, zoölogy. botany, general chemistry, rhetoric and elementary French or German, and freehand drawing among the studies required.

In the second year there is botany, zoölogy, comparative anatomy, geology, comparative osteology, physics, qualitative analysis and themes.

It is certainly to be hoped that the medical teachers of the United States will not remain content with the very elementary examinations which are now demanded for those students who have not received a college education.

The advantage of a previous college training is shown in some statistics given by Billings[10] of examinations conducted by the examining boards of the army and navy. Of those candidates who had a college degree 34 per cent. were successful, and of those who had no such degree 28.9 per cent. succeeded. It is interesting in this connection to note that taking the medical schools of Harvard, Yale, the College of Physicians and Bellevue Hospital of New York, the University of Pennsylvania, and the University of Virginia together, 46.1 per cent. succeeded, while for all the rest of the schools in a body 22.3 per cent. succeeded.

One of the most prominent features of the new education is the character and amount of laboratory work which is now required by our medical school. The new building of the Harvard Medical School, erected twelve years ago, showed the importance which its faculty attached to this means of teaching the student. Already the large addition of the Sears laboratory has more than doubled the facilities of this department of the school. The University of Pennsylvania has felt the necessity of increasing the facilities of laboratory work and has received a munificent endowment for its department of hygiene. The literature of this part of our educational system is already becoming voluminous. The recent reports of Vaughan and Holmes in behalf of the work done at the University of Michigan and of the College of Physicians and Surgeons of Chicago, respectively, show the interest which is taken in this subject in some of the western schools.

General chemistry forms so large a part of the first year's work in the Harvard Medical School that it is proposed to make room for other valuable work by making this study one of the requirements of admission. This course is already anticipated by most of the college graduates. The course on embryology and histology is at present a required one, and lasts throughout the year. Students are obliged to keep books in which drawings are made of the specimens studied and these books are examined by the teacher. Those who do not possess microscopes are provided with them by the school, and the equipment of this department enables it to handle classes of 150 students. Prof. Minot, who conducts this course, urges the addition of a course on biology to the work of the first year, as it would not only enable the student to pursue many of his studies more intelligently, but would add greatly to the value of all original work done by the student or physician.

The new four years' course has been so arranged that the technique of bacteriology comes in the first year. This is a time when the student has more time for laboratory work, and it paves the way for special work in the study of these organisms in connection with pathology, which is placed in the second year. I shall leave a more detailed statement to Prof. Ernst, who will have something to say upon this subject later. Bacteriology needs no special plea to-day. It cannot even be regarded as a purely scientific study. No practitioner of medicine or surgery who emerges from one of our schools to-day should be considered properly equipped for his work unless he has been trained in such a laboratory. No physician can expect to unravel the secrets of disease without a practical knowledge of the demonstration of certain forms of bacteria, and there is certainly no better school for aseptic surgery than the bacteriological laboratory.

The study of pathology at the Harvard Medical School[11] is conducted by Professor Councilman, not only by lectures, but by demonstrations, recitations and exercises in pathological histology. The latter course, which has hitherto been optional, is now obligatory. The relation of bacteria to disease is taught by the study of certain types of disease, as tuberculosis, suppuration, pneumonia, etc.

Demonstrations are given twice a week of material obtained from the hospitals and private practitioners. This is a laboratory exercise. Individual members of the class are called upon to study the specimens. They then carry them around to the other members of the class and demonstrate and explain to them the lesions. Each student in this way has the specimen demonstrated to him. In the course on pathological histology the student is required to make drawings of the sections studied.

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[10] Ideals of Medical Education. 1891.

[11] Bulletin of the Harvard Medical School Association. No. 4.

An opportunity is given to a certain number of men. who have gone through with their course in pathology to act as demonstrators the following year and to assist in teaching. Places are assigned in the pathological laboratory to a certain number of students who have done well in their studies, and opportunity is given them for special study or original investigation.

A type of laboratory course, which I think is peculiar to Harvard, is that on the application of bandages and surgical apparatus. It is a purely laboratory course, is given to students at the beginning of their second year and is confined to a detailed study and drill in the practical part of such work. Bandaging is taught upon the living subject and upon wooden models. The feature of this course which is perhaps most valuable is the preparation and application of all the forms of stiff bandages. In this way every member of the class learns thoroughly the elementary part of this work before he begins to practice upon patients in the hospital, and no student leaves the school without becoming an adept in the application of the stiff bandage.

Another subject which is receiving more and more attention yearly is that of clinical instruction. The weakness of this feature of medical education was one of the glaring faults of the old system, and arose out of the fact that hospitals were far less numerous than they are at the present time, and that, from the necessities of the situation, the independent origin of the medical school became a custom which has continued almost unimpaired to the present day.

In Boston the medical school flourished for nearly one-third of a century before its teachers realized the importance of this problem. A circular was then issued in 1810, in which the statement was made that "a hospital was an institution absolutely essential to a medical school." Would that all teachers of that time had realized sufficiently that fact and had educated the public to recognize the necessity of such a close relation of the two. Many of the older members of this congress can remember the old-fashioned prejudice which resented the intrusion of students into the hospital wards. The theory of the trustee of that time was: This money was given for the cure of patients and not for the education of physicians. They could not be persuaded that the two interests were identical.

The change of feeling in more enlightened times was indicated by the benefactor of the great Johns Hopkins hospital. At the opening of that hospital in 1889 Dr. Billings showed the advantage of such a union in the following words:

> "It is well known to those familiar with the subject that the sick in a hospital where medical instruction is given receive more constant, careful and thoughtful attention than do those in a hospital where no such instruction is given. The clinical teacher must do his best; keen eyes will note every error in diagnosis, every failure in results of treatment. Moreover, the very act of teaching clarifies and crystalizes his own knowledge in attempting to explain, the dark places become prominent and demand investigation, and hence it is that those cases which are lectured on receive the best treatment. I need say nothing here on the other side of the question; the value of properly trained physicians to the community and the necessity for hospital instruction in such training. Johns Hopkins understood all this, and especially directed that 'in all your arrangements in relation to this hospital you will bear constantly in view that it is my wish and purpose that the institution shall ultimately form a part of the medical school of the University.'"

The reaction in favor of clinical teaching is becoming daily stronger, and no school can hope to compete with the great schools of the country which does not have control of what is usually called "clinical facilities." This term must unfortunately still be used; for the number of schools which have a hospital of their own is yet exceedingly small. The union between the two is in most of our large cities becoming a more and more intimate one.

Another immense advantage which the possession of a hospital gives to a faculty is the control of appointments. Most schools are now obliged to select their teachers from members of the staffs of hospitals in their city who have services at times of the year which enable them to teach. These individuals are appointed by laymen who have no knowledge of or regard for the necessities of medical education. Faculties thus placed are unable to select teachers of national reputation, as there is no appointing power which enables them to give such a person the material with which to teach. This is a grave defect in our system, and one which the leaders in medical education should not forget to impress upon the profession and the public.

But, while applauding the movement in favor of clinical teaching it is perhaps well at the present time to consider whether systematic or, as it is usually inaccurately called, "didactic" teaching should be abandoned. The discussion as carried on in medical journals, appears to lean in this direction. A course of systematic lectures enables the teacher to cover ground which he would be unable to do, even in a clinic most richly endowed with material. The method of handling the subject differs entirely from that adopted at the bedside, and in a well regulated four years' course I believe the systematic lecture should still retain a prominent place. Clinical instruction should be abundant and of the most varied kind. Instruction of the class in small sections is a most desirable feature of this department. It involves a greater expenditure of time, an increase in the teaching staff and great ability as an organizer in the head of the department. It is the squad drill, however, which brings the student in most intimate contact with disease.

To carry out these ideals necessitates a "plant" far in advance of that which the average school now possesses. No such enterprise can be undertaken without that aid which has hitherto been conspicuous by its absence. I refer to endowments; the valuable paper of Dr. Bayard Holmes already referred to gives some interesting data on this subject. He says:

> "The productive funds in the hands of medical schools, both those connected with and those independent of universities in the United States was in 1889, $249,200, while at the same time there was in the hands of schools of theology productive funds to the amount of $11,939,631. The value of buildings and grounds used by medical schools at the same time was $4,047,618, and the theological schools were accommodated with buildings and grounds valued at $7,762,095. The medical schools had in 1889, 12,238 students who paid tuitions to the amount of $763,761, while at the same time the theological schools enrolled 6,989 students.
>
> I am able to reinforce these figures by an abstract of the statistics for medicine, theology and technology as reported to the Bureau in June, 1892. The medical schools possessed buildings and grounds in 1892 valued at $7,507,937, and productive funds amounting to $611,214. Medical departments of State universities also received State aid in 1892 amounting to $40,500, which, if capitalized at 5 per cent., would be equal to an endowment of $810,000; making a total endowment of $1,421,214. There were 16,731 medical students in attendance.

The theological schools report productive funds amounting to $17,599,979, and stated, at the same time, the value of their buildings and grounds was $10,720,860. They had 7,672 students in attendance.

Technological schools report productive funds amounting to $13,229,940. These institutions received from State appropriations or municipal aid in 1891-92, $747,504, which, if capitalized at 5 per cent., would be equivalent to an endowment of $14,950,080; making a total endowment for schools of technology of $28,180,020. There were enrolled in the schools of technology 10,921 students, about one-third of whom were in preparatory courses. It will thus be seen that the endowment of theology is increasing at the rate of about two million dollars a year. The technological schools are well provided for, but medicine has scarcely raised its endowment, even at the most liberal estimate, to a million and a half.”

Probably the available funds possessed by our medical schools are somewhat larger than these statistics show, but they give the proportions which are needed to impress upon us how little financial encouragement medicine receives. When we realize what a valuable factor the medical man is in the rapidly increasing development of the territory of a vast and prosperous country like ours, it seems as if his claims to receive encouragement should be listened to. He does not build railroads or organize society in new lands, but he is in the foremost rank of pioneers, with the complete equipment which our teachers can give him to-day, and he becomes a most valuable member of society. He protects the young colony from epidemics; without him State medicine could not exist, and States could not be provided on a basis which could ensure prosperity.

These ideas should be impressed upon our men of wealth and upon the State governments as well. In the meantime it is important that we should adopt as a principle in our new departure in education that the medical faculty should have personal control of hospital wards and management. Let this work begin in a small way at first, but with a view to future development. Such a change can only be brought about by a slow process of evolution. The sooner, therefore, the principle is recognized and adopted, the better. It is difficult for a prosperous school which has abundant opportunities for bedside teaching to realize this, but it can not develop beyond a certain point until it has established its own independence.

I cannot help believing that in this direction lies one of the greatest avenues of development of our system of medical education in the future.

## ADDRESS OF THE PRESIDENT OF THE SECTION ON NEUROLOGY AND PYSCHIATRY OF THE PAN-AMERICAN MEDICAL CONGRESS.

BY C. D. HUGHES, M.D.

ST. LOUIS, MO

*Colleagues of the Continent:*—I bid you cordial welcome. For the first time in the history of the world the medical profession of all the Americas meets fraternally for mutual work and words of counsel for the welfare of the North and South American medical profession and people.

In this Neurologic and Psychiatric Section, brothers, we also, for the first time, grasp the hand of fellowship. We heartily clasp hands with you and in our hearts we embrace you, with the prayer that nothing shall ever dissever the friendship between the Northern and Southern American profession now so auspiciously consummated. May the final handshake between the profession of the North and South American States never be permitted to take place. We want your friendship forever. So long as “earth grows a plant or sea rolls a wave,” we pray that it may endure, growing closer and closer in ties of inseparable fraternity.

In our special departments of medical research and labor we have a common interest, and in every department of medical investigation and advance, our interests are likewise mutual. The sanitary welfare of all the American States is alike. The same hygienic, therapeutic and pathologic problems press upon us all for solution; the medical discoveries of each one of these States redounds to the welfare of all the others.

To this end, therefore, we salute and welcome you, wishing you health and happiness, through a mutually advanced and glorified medical profession, and in behalf of the Neurological Section of this great Congress, I join you in the sentiment, “*America laudamus—viva Americana!*”

Before proceeding to the work before us, it may prove a source of pleasure and profit, and it certainly is flattering to our professional pride to note some of the neurological advances of our day and especially the contributions of neurology to general medicine and the consequent welfare of the world.

None of the many victories in the onward march of American medicine during the century now nearing its close, have contributed, or are destined yet to contribute, more to the happiness of mankind than the light which has been thrown on the nature and treatment of inebriety, dipsomania and chronic alcoholism and their neural sequelæ, especially multiple neuritis.

To a distinguished American physician, signer of that Declaration which gave a nation birth, surgeon-general of the Continental army and teacher of the practice of medicine in the first medical university founded in America, Dr. Benjamin Rush, the scientific world is indebted for having taught that inebriety is a disease. His followers, living in the Pan-American States, taking their cue from this distinguished pioneer medical *savant*, have pursued the study until the therapeutics of inebriety has become as successful as that of any other grave nervous disorder and its pathology as well understood, while medical philanthropy, following his advice,[1] has erected hospitals for the cure and care of its unfortunate victims, though, as yet, no monumental shaft mementos, as it should, a nation's grateful memory of Benjamin Rush's noble work.

We record, also, with satisfaction scarcely exceeded by that we enjoy from contemplating the salvation of the inebriate, the successful cure of the opium habit and other kindred forms of baneful drug enslavement. Yet it has not been long since that once brilliant *litterateur*, De Quincy, himself enthralled, proclaimed in despair the “pangs of opium” and the “Illiad of woes” its enslaved victims hopelessly endured.

The opium fiend, as he is with cruel facetiousness so often called, need not be longer regarded as a hopeless wreck if the hand of charity will only conduct him within the pale of professional resource.

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[1] “Diseases of the Mind,” 1812.

This and alcoholism and all similar forms of nervous derangement are now treated successfully much like certain forms of mental aberration are—by change of environment, by therapeutic repression, including hypnotic support and reconstruction of the damaged and aberrantly-acting neuropsychic centers. This is another jewel medicine offers for the crown of modern progress.

Notwithstanding the illustrious names which, in our own day, the world beyond our geographical boundaries has given to medical science, our American States have likewise their great physicians whose offerings on the altar of that science whose special care is the welfare of man, are worthy of exalted place beside the Old World's gods. For the Virchows, Charcots and Lombrosos, Maragalianos and Kowalewskys, Gulls and Horsleys, of world-wide fame beyond our shores, we have given to the world our Brown-Séquard, who went from America to cosmopolitan fame; our Hammond, another pioneer American neurologist whose books have been translated into all the languages of civilization; our Seguin likewise, and our Pepper, President of this Congress and the peer of Sir William Gull of Great Britain, and Ferran, whose preventive inoculations against cholera Asiatica called the medical world's attention anew to the grandeur of Spanish medicine. If Wigan could conjecture the duality of the mind from theoretical considerations and the general division of the brain into hemispheres, Brown-Séquard later, and at the time an American, proved it, and even my own feeble contribution on the "Duality of Action and Vicarious Functions of the Cerebral Lobes and Hemispheres,[2] in 1873, might count for something, even though it emanated from a lunatic asylum in the valley of the Mississippi. If Hitzig, a German, and Ferrier, an Englishman, demonstrated and located motor centers in the cerebrums of the lower animals, Bartholow, an American established by satisfactory physiological experiment their correspondence in the human brain.[3] If Victor Horsley and others first clinically applied the discovery of cerebral localization to surgical therapeutics for brain diseases, Professor William Fuller, a Canadian anatomist and surgeon, first trephined the skull in a case of idiocy, an operation which has recently been heralded from abroad as a new surgical procedure.

The author of this operation, now residing in this country, in Grand Rapids, Mich., is the designer from life of a series of brain sections and sectional casts, photographs and models, some of which I now show you, which have not been excelled in Europe.

Now that this operation of Dr. Fuller has come back to America with European approval as a European procedure, it is interesting to note the reception, a part at least, of the medical press of England, gave the novel surgical procedure at its inception on this continent.

The following extract from *The London Doctor*, a monthly review of British and foreign medical practice and literature, No. 1, Vol. 8, page 5, January 1, 1878, is appended as evidence that the case reported in this paper, received at the time a wide publication:

> "Dr. Fuller of Montreal, has, says the *Canada Lancet*, conceived the novel idea of trephining out portions of the skull of an idiot child of two years old, so as to allow the expansion of the brain. The idea is certainly novel, so far as we know, no surgeon having previously ventured to remove portions of the skull cap so as to allow the brain to expand. We sincerely hope this brilliant (!) experiment will not be repeated. How does Dr. Fuller propose to protect the exposed portions of brain, should the brain protrude through the apertures he has made? According to latest advices, Dr. Fuller contemplates removing another piece. We hope not."

Under the name of linear craniotomy, this operation has recently found decided approval both at home and abroad. Engel speaks enthusiastically of it even for dementia epileptica.

If European surgery first exsects a stomach, or a kidney, or cuts down upon and removes a stone from the bladder or gall cyst, American surgery, represented in the person of Ephraim McDowell, with a temerity that startles the conservatism of Europe; first cuts into that surgical terra incognito, the abdominal cavity and saves an imperiled human life by successfully removing an abdominal tumor; a feat common enough now, alas, all too frequently performed by novices with the knife, lacking in mature surgical judgment. He and Battey, another American, led the way for the successful ovariotomies of Lawson Tait and his followers, and Marion-Sims God bless his gentle, precious memory, lays the foundation, by a peerless procedure on the female perineum, for the rescue of womanhood from untold misery. Marion-Sims, who, when asked to unsex a woman, in whom there was other possibility of salvation, could say to Weir Mitchell, "Let us give her a reprieve; I never unsex a woman without a pang;" and the woman got well as you and I know hundreds of others would, if permitted to do, without oöphorectomy. God bless Marion-Sims.

As we are justly appreciative of the part which American skill has performed in the world's surgical advancement; as the recalling of the names and deeds of our Motts, Brainards. Popes and Stones and Physics, Gross and Hodgens, gives us pleasure; if we revere our Rushs and Woods as England does her Hunters, Sydenhams and Gulls, so of our own American alienists and neurologists and their achievements, we are justly proud. The accomplished Isaac Ray and the gifted Amariah Brigham, Pliny Earle and Tyler, now no longer among us, and Van Dusen, the son of Michigan and a Kalamazoo asylum superintendent, whose essay on "Neurasthenia" preceded that of the classic work of Beard on "Nervous Exhaustion"—Beard who gave to the world a new disease, and gave it a new name, although the term "neurasthenia" was borrowed unknowingly from Van Dusen (*vide Alienist and Neurologist*, Vol. I, No. 4, 1880). Since these contributions appeared, the subject of nervous exhaustion has become too common in the literature of this country and Europe to need further mention here.

There are three works of Dr. Hammond which have had much influence on neurology and medicine generally, and these were accomplished during his service as surgeon general on the active list of the United States army:

1. The establishment of the Hospital for Injuries and Diseases of the Nervous System in Philadelphia, where the foundation of Dr. Weir Mitchell's most original work, "Wounds and Injuries of Nerves" was laid, Dr. Mitchell having been placed in charge by Surgeon General Hammond.

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[2] American Journal of Insanity, Vol. XXXII, 1875

[3] American Journal of the Medical Sciences.

2. The establishment of the Army Medical Museum in Washington.

3. The origination of the "Medical and Surgical History of the Rebellion."

These three things give our colleague just claim to distinction. I think the Hospital for Nervous Diseases was the first of its kind ever established in the world. Besides, our colleague wrote the first systematic" Treatise on Diseases of the Nervous System" in the English language, if not in any language.

If we look for discovery and classification of disease, America has not been entirely wanting. For a long time Beard's claim was controverted abroad; afterward neurasthenia was called "the American disease," then "American nervousness," till finally foreign writers recorded it among their people, even away off in far-off Russia, where Kowalewsky has written his classic book on the subject and given us due credit for our discovery. So in regard to Hammond's discovery of athetosis and mysophobia, and the coinage of these terms; and in regard to neurasthenia, I believe it is even now conceded that the original American claim[4] of general functional neurotrophia as the foundation of nervous exhaustion is universally admitted.

Seguin, in his clinical lectures in 1890, first suggested the substitution of a mixture of chloral and bromid for simple bromid, in the treatment of idiopathic epilepsy, when certain indications are present, chloral being indicated when the bromids alone produce undue stupor and extremely severe acne; also in cases where psychic disorder follows the stoppage of the bromids. This practice has now become general. He first attempted to subdivide the symptomology of "cerebral hyperemia" (of Hammond and others) into several new groups according to etiology, e.g., cases due to lithemia, to feeble or diseased heart, and (a large group) to eye strain, etc. He also attempted to give the distinguishing clinical signs (*N. Y. Med. Jour.*, Dec., 1892), between cases of cerebral paresthesia due to insufficiency of the interni, and those due to insufficiency of the externi, and recommended the use of nux vomica and strychnia for weakness of the interni and of belladonna, cannabis indica and other mydriatics for weakness of the externi. These drugs to be used as tests for diagnosis, and also for continuous treatment. He contributed by autopsies and clinical cases to confirm the doctrine of cortical localization of functions, in respect to the visual center (cuneus, in 1880, I think); the speech center (1868); and in subsequent years the facial, brachial and pedal, or crural, centers, and gave absolute postmortem evidence in support of the idea that such centers exist.

Besides Bartholow's communication, the whole subject of cerebral localization has received additional light from the contributions of our Charles K. Mills, of M. Allen Starr, Eskridge, Spitzka, myself and nearly every American neurologist, while the contributions of the latter to cerebral pathology, as those of Isaac Ott to cerebral physiology, have been justly acknowledged abroad.

Seguin and Hammond early advocated before any one else abroad, I think, the use of large doses of potassium iodid in syphilitic or non-syphilitic diseases of the nervous system, giving historical proof of its American origin (New York) and called it the "American method." Attempts have been lately made in Europe to ignore our great priority in this. Seguin says he learned it from Van Buren and Draper in 1865–7. I adopted this practice at the insane hospital at Fulton in 1867–8.

It falls to the lot of but very few men to discover a really important thing and to cause a great forward step to be made in medical science. Most of us must be content with helping the good work of adding new facts of secondary importance, and trying to apply scientific methods to the treatment of disease. I think that in this sphere of secondary scientific usefulness, American neurologists have made and are making good records.

The clinical relation of absent patellar reflex to locomotor ataxia, though first shown by Westphal and Erb, was extensively studied by Seguin, Gray, myself and others, and its relation to other diseases and the *possibility* of the knee-jerk being naturally nil in some persons was first shown in this country and acknowledged abroad,[5] so that the knee-jerk criteria of tabes dorsalis is a lost reflex, and an exaggerated jerk in lateral sclerosis and other states. I myself offered the first proof many years ago that it need not be present in apparently healthy individuals. One of those persons still lives and is free from any spinal or other nervous disease to this day. What is true as to elucidation of this reflex is equally true of the cremasteric and other reflexes, *vide* writings of Weir Mitchell and others. The bulbo-cavernous reflex and the virile reflex, practically the same thing, were discovered and clinically elucidated about the same time in Europe and America.

The value of the cremasteric reflex has been studied by Weir Mitchell with the same thoroughness of elucidation as that he has given to lesions of the peripheral nervous system generally; and Dr. John Ferguson of Toronto, Canada, has also thrown new light upon the patella reflex (*vide* "Remarks on Some Cases of Hemiplegia," *Alienist and Neurologist*, January, 1892). This subject has also lately been enriched in this country by Dr. F. X. Dercum, in a paper on "Optic Neuritis, Blindness and the Knee-Jerk in Cerebellar Disease," read before the American Neurological Society, July 25th.

The important subject of rheumatism affecting the nervous system was embodied in the recent address of Dr. Henry M. Lyman, before the American Neurological Association, and attention called to important clinical facts, especially affections of the sensory nervous system, not commonly recognized as associated with this disease.

The gastralgias, enteralgias, cutaneous irritations, sensitive feet and arthritic and cutaneous neuritides of rheumatism, have often attracted my attention, and have been to me an interesting clinical study, and much more is yet to be written on this important subject.

In the therapeutics of the nervous diseases, as well as in clinical description and pathology, to America belongs much credit for originality and efficiency of discovery and suggestion. Was it not in this country that the great Brown-Sèquard first conceived and promulgated his famous treatment for epilepsia, which has done more than all preceding or subsequent therapeutics suggested for the alleviation of this grave malady?

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[4] Vide, Alienist and Neurologist, Vol. III, No. 3, 1882.

[5] "Diagnostic Significance of Absent Patellar Reflex."—Alienist and Neurologist, January, 1880; St. Louis Medical and Surgical Journal, February, 1879.

All the now acknowledged virtues of phytolacca decandra, or poke root, except the property of phytoline to reduce corpulency, were brought to my attention through the thesis of a student candidate for graduation of the St. Louis Medical College in 1859: and Dr. Bealle, a fellow-graduate with me that same year, from Texas, told in a thesis, which he entitled "Ups and Downs of a Texas Doctor," how he made a satisfactory flexible bougie out of green slippery elm bark, how he employed a smooth green wheat straw for a catheter and the crushed potato bug mixed with lard as a satisfactory vessicant in lieu of Spanish cantharides—practices which I imitated myself while doing a general country practice in Missouri in 1859 and '60, when I could do no better, and there is nothing much better for gentle dilation in certain surgical emergencies than a smooth slippery elm bougie. I could relate other instances of western American surgical genius in the use of therapeutic expedients in pressing emergencies of practice were they strictly germane to our subject.

I claim the credit myself of having first suggested and used in private practice chloral hydrate per rectum in the treatment of convulsive affections, a method based on the West Riding asylum practice in epilepsy, and used by me for arresting the convulsions of children and of the puerperal state.

Leonard Corning's method of local anæsthesia is original and we justly claim the discovery and therapeutic application of general anæsthesia as American, Sir James Y. Simpson, to the contrary notwithstanding. Copious ether douching for cephalo-spinal pain was practiced by myself thirty years ago. I was the first to employ capsicum, hot coffee and ammonia enemata to resuscitate from profound opium narcosis (*vide* Appendix), after failing with a battery. Kiernan was the next to follow the practice.

In the department of electrotherapy, especially in diseases of the nervous system, America stands well forward in therapeutic suggestion and resource. Beard and Rockwell and their followers in this country have done much in this line. It has been fully thirty years since I first employed the constant current for cerebral and other congestive states, not excepting ovaries and pelvis, and recommended it in gynecology, based on a prior recommendation of Legros and Onimus that it would reduce interpelvic sanguineous fluxes. It has been more than twenty years since I began the systematic employment of constant cephalic galvanizations for the cure of insomnia and the treatment of epilepsia, under the conviction that the prominent symptomatology of both of these affections were dependent upon disorder of vasomotor control, which cephalic galvanizations tend to restore as the bromids do. But I must not speak further of myself.

In this connection I may properly mention Dr. Henry M. Lyman's book on "Artificial Anæsthesia and Anæsthetics, Insomnia and other Disorders of Sleep." as a valuable American contribution to these subjects.

We have done no markedly original work in hypnotism, but have some imitators of Charcot and others, as Charcot and his followers have with professional applause followed Braid, the professionally tabooed Manchester follower of Mesmer, the mountebank original.

Cataphoresis in neurotherapy has been considerably advanced in America by Corning, Peterson and others, and likewise the hypodermic use of arsenic by Moyer; also the employment of antipyrine, acetanilide and other coal tar derivatives, by the last named and many others. (*Vide* Appendix.)

The therapeutics, as well as semiology, of insanity has been enriched by Jewell and Moyer in this country, by treatment directed to the colon. (*Vide* Appendix.)

Nitroglycerine, or glonoine, was first suggested to the regular profession in 1876 and '78, by Allen McLane Hamilton, before Murrell or others abroad had used it, for anemic cerebral states and cerebral arteriole spasm. It was on this recommendation and the recommendation of nitrite of amyl for a similar purpose, that I first employed the latter for the differential diagnosis of supposed hyperemic from anemic intracranial states. (*Vide* editorial in *Alienist and Neurologist,* October, 1880.)

A decidedly original and successful procedure in American surgical neurotherapy is that of pudic neurectomy as a remedy for masturbation, reported by Dr. J. S. Eastman in the *Medical News* of August 12th, of this year. The nerve being more sensitive on this side, Dr. Eastman cut down upon the left pudic nerve, which he found hypertrophied, and removed three inches of it. The patient gained weight and was freed from this vice, which had existed from the sixth to the twenty-sixth year. She had been previously sutured in the labia, cauterized, oöphorectomized and clitorectomized without benefit.

Veratrum viride, one of the very best remedies I know of for sthenic states of high cerebral and pulmonary congestion with full, bounding pulse and violent cardiac systole, is better than the lancet in high grade apoplexy and pneumonia, as it is fatal to apposite asthenic states of pulmonary inflammation and cerebral congestion, is a distinctly American remedy, and the practice of using it, as well as abusing its use, is of American origin. It may sometimes well substitute the bromids in certain phases of neurotherapy. I have so employed it. But we must not further dwell specially on American original contributions to neurotherapy. We could not complete the subject in the limits of an ordinary duodecimo volume, while another volume of equal size would not record the real practical progress and unequaled elegance of American pharmacy as applied to our therapeutics.

In the direction of neurological originality and advance, the work of our own distinguished Spanish-speaking secretary, Dr. M. G. Echeverria must not be overlooked. Though his modesty has prevented him from publicly claiming his due reward of merit, his claims have not been overlooked by foreign sources of appreciation.

His English publications, notably his great book on "Epilepsy," although scarcely noticed by American authors, are much and favorably quoted by neurologists in Germany, England and France. On their merit he was elected honorary member of the Medico-Psychological Society of Paris, and of Great Britain and Ireland; also vice-president to the first Congres International de Medecine Mentale, held in Paris in 1878, when he was called upon to preside on motion of the late Prof. Lesegue, after the sudden illness of Dr. Baillarger, chairman of the congress. So far as I know, Dr. Echeverria was the first physician in this country who, as "Professor of

Nervous and Mental Diseases," delivered didactic courses of lectures on this subject. This was in 1861, in the University Medical College of New York, while Seguin followed at the College of Physicians and Surgeons, in 1873. On his removal to New York from the National Hospital for the Paralyzed and Epileptic, in London, where he had occupied the position of resident assistant physician with Drs. Brown-Séquard and Ramskill as visiting physicians, he induced the Commissioners of Public Charities and Correction to establish the Hospital for Epileptics and Paralytics on Blackwell's island, New York, under his chief direction, and to found a school for idiots in Randall's island. Dr. E. Seguin, *père*, Drs. Kerlin and Wilmarth, of Elwyn, in their literary and practical works as revealed in the pages of the *Alienist and Neurologist*, *vide* Appendix, Dr. Brown of Barre, Mass., and the Wilburs have certainly done much creditable pioneer work with this class of defectives.

We may here remark, as facts of historical interest, that Dr. Echeverria was the first in America to perform, in 1865, assisted by Dr. J. H. Douglas, excision of a large portion (two inches) of the ulnar nerve at the elbow for the radical cure of epilepsy following upon traumatic injury. In 1869, in the presence of Prof. Boeck of Christiania, and other physicians and students, he removed at the hospital in Blackwell's island, the largest sanguineous clot (one and three-fourth inches long by three-fourths of an inch wide) ever extracted, to that time, from the base of the second parietal convolution of an epileptic lad, another operation lately originated abroad. The conical fibrinous clot was deeply imbedded in the cerebral substance, and the patient directly recovered his lost intellectual faculties upon the successful operation. The case is reported in his "Clinical and Anatomopathological Researches on Epilepsy," and in a subsequent paper published in Paris in 1878 (*Lesigue's Archives Generale*), with the records of five similar cases from Dr. Echeverria's own practice, and one hundred and forty, mostly by American and English surgeons. This paper was written mainly to show how unwarranted was the risk of this procedure then ascribed to it by French surgeons.

This distinguished neurologist, one of our colleagues, to-day, and those I have named before him, will not be overlooked when a candid world enumerates in history America's neurological benefactors.

Worthy of special mention with the foregoing is our indefatigable co-worker and colleague, Prof. Chas. K. Mills, whom the University of Pennsylvania has so lately honored with its chair of mental and medicolegal medicine. His recent studies in "Lesions of the Superior Temporal Convolution," accurately locating the auditory center, his presentation of the subject of aphasia and other affections of speech in their medico-legal relations, and lesions of the cauda equina, are real advances that must be universally acknowledged, as are likewise the complications of multiple neuritis and other papers, which we present in the appendix.

And now I name another star which shines in the neurological firmament of New York—a star emphatically spelled by his far-seeing parents with a double "r."

Among numerous recent contributions, besides his book on "Brain Surgery" (published by Wm. Wood & Co., New York), he has given us a special study of "Local Anæsthesia as a means of Diagnosis of Lesions of the Lower Spinal Cord" (*American Journal of Medical Science;* July, 1892); "The Cerebral Atrophies of Childhood, with Special Reference to Imbecility, Epilepsia and Paralysis" (*N. Y. Medical Record*, Jan., 1892); "Trephining for Hemorrhage of the Brain Producing Aphasia—Recovery" (*Brain*, 1892); "Hemi-Analgesia Alternans" (*N. Y. Med. Record*, Feb. 11, 1893), and has thrown some new light on the subject of "Syringo-myelia" (*vide American Journal of Medical Sciences*, May, 1888). His book, "Familiar Forms of Nervous Disease," is a credit to any country. Other bright neurological stars are shining, and many have shone longer, in the same scientific and humanitarian sky.

It is my impression that Ord's discovery of myxœdema received its first clinical confirmation in this country, and McLane Hamilton, I think, furnished five of the earliest clinical proofs of its verity as a distinct disease.

Hamilton first pointed out the neuro-genesis of certain meningeal inflammations, and I have maintained and do yet maintain that hemophilia is a vaso-motor neurosis.

The *Alienist and Neurologist* (April, 1884, *et seq.*), early maintained that oöphorectomy was too often performed, upon the mistaken assumption that the ovary originated nervous disease, whereas the reverse is the most common clinical fact. This is not only an original American claim, but it is now becoming a generally admitted fact both abroad and at home, and the latest and best articles on this subject are by Dr. Hamilton.

Another rising luminary of this field is Dr. Frederick Peterson, a reference to whose late contributions (*vide* the Appendix) will interest you and show some good spokes, at least, in the wheel of neurological progress. His recent papers on "Cataphoresis," his physiological experiments with magnetism at the Edison laboratory, and his joint papers with Sachs on "The Cerebral-Palsies of Early Life" (*Jour. of Nervous and Mental Diseases*, May, 1890), and other papers to be found in Appendix, are all valuable.

But the stars of this firmament are too many to be counted. Should we dwell long enough to attempt it, we should not during our hour get round the circle. There remain Sachs, who has translated Maynert's "Psychiatry" for us; Bert Wilder, "The Brain Builder of Ithaca"; A. Jacobi, "The Universal Genius"; Corning, already mentioned, whose book on "Brain Exhaustion" is standard. There is also Dana, to whom we have already alluded, with Carter Gray, whose respective books are abreast of all neurological advance, and in every way creditable to American neurological science; besides E. N. Brill, Graeme M. Hammond, and Brown of the *Journal of Nervous and Mental Diseases;* also Ambrose L. Ranney and his standard textbooks on "Nervous Diseases and Neurological Anatomy," and Geo. I. Stevens with his Belgian Academy prize essays on the "Oculo-Neural Reflexes, and the Relation of Eye Strain to Nervous Diseases," whose first article on this subject appeared in the earlier numbers of my journal. Too many stars to classify and minutely describe, but they make a brilliant constellation.

If we look back to Philadelphia we discover another neurological star that has escaped our gaze, Wm. C.

Wood, whose treatise stands high, and yet another, Dr. A. H. P. Leuff, of neuro-anatomical fame, also Harrison Allen. There is Wormly, too, of Philadelphia, who is not altogether without the pale.

Far to the southward are Joseph Jones of New Orleans, and Buckley of the occidental metropolis.

And now, casting our eye to Baltimore, our vision falls on three luminaries, Miles, Osler and Hurd, whose light has not shone in vain; there also shine Conrod, Reed, Berkley, Welch and Halstead of Johns Hopkins hospital.

Skirting the sky northward we come to the Hartford constellation, Stearns and Crothers. The book of the former is devoted to practical psychiatry; the contributions of the latter to that important branch of psychiatry which, through Mason, Wright, Crothers and others has made such rapid forward strides in America, as well as in England, the study of inebriety.

The subject of alcoholic trance has been almost exclusively an American neurological study, and Dr. Crothers has contributed more than any other American, perhaps, to make it plain. In the Appendix appear further evidences of American advance in this direction:

"Law of Periodicity in Inebriety" (*vide Alienist and Neurologist*, July, 1892), showing a uniformity in the drink impulse and the laws which regulated it.

As our vision ranges further, Boston, with its neurological and psychological *savants*, comes into view —Philip Coombs Knapp and his book on "Intra-Cranial Tumors and Other Diagnoses;" Putnam, Channing, Webber, Folsom; John E. Tyler, the departed alienist of Sommerville, and Oliver Wendell Holmes, the poet sage and anatomical and psychological *savant* of Harvard. The subject of "Arterial Tension in Neurasthenia" received some new light from Boston in 1888 (*vide* article on the subject by Webber, *Boston Medical and Surgical Journal*, May 3, 1888); likewise the subject of "Lead Paralysis as it Affects the Brain" (*vide* same source, October 29, 1891); also the "Condition of the Blood in Certain Mental States" *vide idem*, March 24, 1892). The same journal for August 29, 1889, also contained some additional light on "Paramyoclonus Multiplex," and other peculiar forms of spasm, and in September of the same year, in same journal, page 277, this American writer throws additional light on the subject of "Cerebral Tumors and Their Treatment."

As we continue our survey of the neurological heavens, we come to the constellation Chicago, with such bright, particular, neurological stars as Lyman, with his book on "Practice;" Kiernan, the polygot; Moyer, the tireless; Paoli, Sanger, Brown, Brower, Clevenger, Lydston, and their books, and Church,—sadly remembering one bright luminary of these heavens now blotted out, whose light shone for a time upon our particular sky with effulgent luster—Dr. J. S. Jewell. He was a star of the first magnitude, a neurological Jewell of the first water, an indefatigable student, a painstaking observer, and a writer of the highest ability.

He blotted out his own bright life in the prime of his manhood by over zealous work in the cause he loved above his life. He founded and maintained while he lived the *Journal of Nervous and Mental Diseases*. And this reminds us that we should not omit most honorable mention, in this connection, of the name of Dr. Jewell's worthy and industrious co-worker, Dr. H. M. Bannister, among the men of might in Chicago who have contributed to brighten her brilliant neurological sky.

Moyer has contributed a paper for the advancement of clinical neurology not already referred to: "Clonic Rhythmical Spasm of the Pronator Radii Teres" (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1887); "Periodically Recurring Oculo-motor Paralysis" (*The Medical Record*, 1887), being the first case described in this country; "Akinesia Algeria" (*Medical Standard*, 1893), being the sixth case reported, and the second in this country; and "A Rare Occupation Neurosis" (*Medical News*, 1893). By his works ye shall know him (*vide* Appendix for much more than we have here noted).

Within almost a suburban radius of Chicago is McBride of Milwaukee, and his "Review of Insanity and Nervous Diseases."

Modesty forbids my dwelling at length upon what St. Louis has done for the advancement of neurology. We may recover from our modesty sufficiently to appear in the printed Appendix; however, I might briefly intimate that both Dr. Bremer and myself have within the past few years added something to the literature of "Astasia-Abasia;" Fry to "Chorea;" Shaw to the subject of "Trephining for Brain Disease," and Bauduy to the "Study of Alcoholism and its Treatment." This is not all that we have done; but it were better that some one else, non-resident, should record and comment on our work, and I may say again, as I have said before (*vide* Appendix).

Now, if we continue our survey, we find the sky of neuriatry and psychiatry is not dimmed as we approach the region of the apparently setting sun. On the contrary, bright stars illuminate the western heavens. See how Eskridge shines:

He has contributed a valuable paper on "Nervo-Vascular Disturbances in Unacclimated Persons in Colorado" (*The Climatologist*, March, 1892); the important conclusion of which is for persons on going to the high altitudes of Colorado, especially for those who are nervous or who suffer from pulmonary trouble or cardiac weakness, to live comparatively quiet, until they become accustomed to their changed environments.

Likewise another on "Chorea in Relation to Climate, Especially the Climate of Colorado" (*Climatologist*, August, 1891). This study of the effect of the climate of Colorado on chorea shows but little, if any, modifying influence due to altitudes of 5,000 feet to 6,000 feet.

Another exceedingly valuable and advance contribution to the literature is "Retro-Anterograde Amnesia, with Report of Two Cases" (*Alienist and Neurologist*, July, 1892). This is an exceedingly interesting subject, both from a psychological and medico-legal point of view.

This is as far as we can go with Eskridge. But he has written much from his high standpoint in the Rocky mountains, and all is in the line of advanced neurology. (*Vide* Appendix.)

Next comes Howell T. Pershing of Denver, who records five cases of pre-ataxic tabes dorsalis with optic nerve atrophy in which there were marked atrophy of the optic nerves with little or no ataxia. He gives a statistical study of tabes, and shows that (as Walton and Gowers have recently claimed) the early occurrence of optic atrophy is in some way associated with an arrested development of the spinal symptoms.

This fact modifies the ordinary rules of diagnosis and prognosis.

He also records a case of Jacksonian epilepsy, with successful operation; no recurrence of the paroxysms more than a year after operation. Other articles by this writer are: "Language and Brain Disease" (*Popular Science Monthly*, October, 1892), and "Disseminated Sclerosis following Syphilis" (*International Clinics*, July, 1891).

But we cannot go farther in this manner. If we went hence south to the City of Mexico, thence across the gulf to New Orleans, thence north to St. Paul and crossed the continent to San Francisco, we should find working neurologists contributing their quota to the world's neurological and psychological progress.

As I am about to conclude, the proceedings of the July meeting of the American Neurological Association have just appeared in the weekly medical press, and here are its notes of American neurological progress:

Besides the President's Address and Dr. Dercum's paper, to which I have referred, Dr. Smith Baker's paper on "Heterogeneous Personality;" Matthew Field's on "Hospital Detention;" Frederick Peterson's on "Temperature in General Paralysis of the Insane;" Joseph Collins' on "Changes in the Spinal Cord in Old Cases of Infantile Paralysis;" G. M. Hammond's of "Progressive Muscular Atrophy;" C. L. Walton's "New Method of Reducing Dislocation of the Cervical Vertebræ;" Dana's "Acromegaly, Gigantism and Facial Hemi-hypertrophy;" J. J. Putnam's "Thyroidectomy in the Treatment of Graves' Disease;" B Sachs' "Tabes and Syphilis;" Kraus' "New Pedodynamometer;" Drs. Lloyd's and Reisman's joint communication on "Infectious Endocarditis with General Septicemia and Multiple Neuritis;" C. L. Walton's "Tumor of the Angular Gyrus;" Dr. E. D. Fisher's "Autopsy and Report of Congenital Cerebral Hemiplegia;" C. K. Mills' "Lesion of the Thalamus and Internal Capsule;" Wharton Sinkler's "Tumor of the Optic Thalamus;" Geo. J. Preston's paper on the "Localizing Value of Aphasia;" Leonard Weber's on "Neurasthenia;" Kraus' "Case of Myxœdema, with Observations;" Philip Coombs Knapp's "Simulation in Traumatic Nervous Diseases;" and "The Microbic Origin of Chorea," by Dr. C. L. Dana, are all instructive, suggestive and progressive in our department. The proceedings of this favorite American society are becoming every year more and more valuable. They are indispensable to neurological advance. The neurological world would not march on to its manifest destiny to rule paramount in the world's medical thought without the original work of this great American society of distinguished neurologists.

There were also papers read only by title before this body, the names of whose authors are also adequate warrantee of worth. Among them—"The Genesis of Hallucination and Illusion," by H. A. Tomlinson of St. Peter, Minn.; "The Diagnosis of General Paresis," by L. C. Gray of New York; "Two Cases of Friedreich's Disease," by F. R. Fry of St. Louis; "The Metapore or Foramen of Majendie in Man and in the Orang-Outang," by Bert G. Wilder; "The Relations of Chorea to Rheumatism," by C. Eugene Riggs of St. Paul; "Experiences in the Use of Testiculine and Cerebrine," by J. J. Putnam of Boston; "Paralysis after Surgical Operations," by V. P. Gibney of New York; "Traumatic Brachial Plexus Paralysis in Infants," by Wm. Leszynsky of New York.

If I should go on enumerating the work, present and recent, of American neurologists, it would develop acute cerebrasthenia. It would make you tired.

I had almost forgotten to note the contributions of our hospitals for the insane to the pathology of mental diseases. I cannot now go entirely over this vast subject. Besides what has been done at Utica, N. Y., and Middletown, Conn., with which you are familiar through the *Journal of Insanity*, you may not know that it has for a long time been the custom of Dr. J. W. Blackburn, the eminent pathologist of the Government Hospital for Insane, at Washington, to each year select a number of cases for special study as a pathological supplement to the annual reports of the Government Hospital for Insane. This and the making of nearly one hundred post-mortem examinations yearly, constitutes the work of this hospital, to which I also invite your attention in the Appendix.

You see, America breeds and develops neurologists as the water breeds and develops fishes. The pabulum neurology feeds on is in the American people—their hustling, rushing habits, their business, professional, social and political environment, and the numerous newspapers they read every morning before breakfast and every night before they forget to say their prayers—this moral, political, social and business atmosphere of ambition and bustle, tends to develop the strongly endowed, neurologically and psychologically, as it tends in the weakly endowed to the development of neuropathic conditions. It develops neurologists and psychologists to care for the neuropaths. It builds and it breaks the nervous system. It can not yet be said that we are a neuropathic people, though we are tending that way; but neurology is advancing with equal pace with neuropathic break-down, and will, it is hoped, ultimately enlighten and save the people from their neuropathic sins.

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## ADDRESS.

BY E. FLETCHER INGALS, A.M., M.D.

CHICAGO.

EXECUTIVE PRESIDENT OF THE LARYNGOLOGICAL SECTION.

*Gentlemen and Colleagues:*—In calling to order the Laryngological Section of the Pan-American Congress, I take the opportunity to congratulate you upon the number and excellence of the papers which have been secured for your consideration.

I feel that there is a special reason for felicitation upon the propitious circumstances under which we have convened, because of our success in spite of many obstacles.

The laryngologists of this country as well as those who would have visited us from abroad, have been called upon for more than the usual amount of work during the past few months. Early in May the American Laryngological Association met in New York and was largely participated in by those who otherwise would have been free to aid us. Shortly afterward the American Climatological Association met in Philadelphia, taxing the energy and taking the time of many of the laryngologists of this country. Only three weeks subsequently the American

Medical Association met in Milwaukee, with a large attendance upon the Laryngological Section. In addition to these, the various State Medical Societies called out a considerable number of papers upon diseases of the throat and nose. Besides this, many of the laryngologists who contemplate going abroad have undertaken to prepare papers for the International Medical Congress which was to have met in Rome shortly after the close of this Congress.

When the American Laryngological Association held its first meeting in 1879 there were, all told, less than thirty men in the United States sufficiently interested in the subject to be counted laryngologists. But the ranks have been added to rapidly year by year, until now there are probably not less than four times that number who are well equipped; and in all of the cities and larger towns throughout the country are others more or less qualified who are doing considerable work in this special line, and it is probable that to-day 500 men could be found in the United States who might present something of interest to this body, though I have been able to discover only about 200 of them.

Nearly a year ago I opened correspondence with the physicians of Central and South America and of the West Indies, hoping to get them to join us in this Congress, but I regret to say that in only a few instances have I been able to obtain replies to my letters, and that only two or three of our colleagues in those countries have promised papers for this occasion. Considering the limited intercourse which has always existed between the United States and the Latin Americas, this is not a matter of surprise, but it is hoped that this Congress will be a beginning of closer alliance and personal friendships which will in coming years bring us often together, and build up a powerful International Congress in this western hemisphere.

The railroad already projected through Central America which will connect with various railroad systems in South America, and increased means of communication by sea will, it is believed, ere long open up to physicians of the United States many new and valuable resorts whose climatic influences may be made subservient to our patients in their search for health. When this has been brought about it is obvious that our acquaintance with the physicians in these southern climes will be of the greatest advantage to our patrons.

We welcome you, one and all, to our National Capital. We ask of each, your hearty cooperation in the work before us, and we believe the final results will justify the large amount of labor and anxiety which have been expended in this undertaking.

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## ADDRESS OF THE EXECUTIVE PRESIDENT. SECTION ON GENERAL SURGERY.

BY JOHN B. HAMILTON, M.D., LL.D.

CHICAGO

*Colleagues:*—For the first time in the history of the American continent, the medical men of the Americas meet in convention, for the purposes of scientific advancement and the cultivation of closer professional relationship.

The country of WASHINGTON, the land of BOLIVAR, and the sunny islands of the southern seas, have sent their representatives to this capital of their oldest republic, to exchange courtesies, and set forth a fair statement of their degree of enlightenment in the various branches of medical knowledge.

Our statesmen have long desired this close union between the American republics, and the medical profession, now as ever, stand ready as citizens to carry out their share of this patriotic duty. After our own civil war, the medical profession, through the American Medical Association, met in annual reunion at Atlanta; and it should always be a matter of professional pride that our own led the van in this march of professional and social reunion. Here again we are inaugurating the first of what we hope may be the beginning of a series of Pan-American professional congresses, each more interesting than its predecessor, and all serving to unite our glorious lands in common aims and mutual regards.

As the United States has had the honor of proposing the Congress, the burden of organization has fallen largely upon its representatives, and the overflowing program is to-day evidence of the faithfulness with which our President, our Secretary General and their coadjutors have performed their task.

We welcome you, dear colleagues, to a rare treat in the republic of letters; our foremost medical men will address you, and the topics they bring for your consideration have living interest, for they are topics of to-day.

A glance at our program shows that our own Section, notwithstanding the subdivisions by which many branches of surgery have been organized into separate Sections, is ample to fully occupy the time set apart for our deliberations.

The rapid evolution of surgical knowledge is one of the wonders of this remarkable age, and surgeons may fairly claim that their own branch of medicine has kept equal pace with the stupendous advances made by the collateral sciences. A review of the surgical progress of the last decade, alone, constitutes one of the most brilliant pages of the history of medicine. And yet one must remember that all scientific progress is based on antecedent fundamental facts, discovered by slow, laborious and painful steps.

The labors of Darwin, Huxley, Herbert Spencer, Pasteur and Lister, in the last decade, have made possible the practical successes in the present decade.

There is at this time no diseased organ or tissue of the body that escapes the remedial scalpel, and an examination of the discussions of this time shows that the questions presented are rather those of method, than those of original discovery. We no longer question the propriety of surgical interference, in hitherto dark portions of human anatomy, but we are concerned in the technique of that interference; and to the improvement of surgical technique the ablest minds of the present decade have been directed.

The subject of surgical bacteriology, which includes the chemical study of microbic products, has still much to disclose, but we already base our practice on the immortal discovery of Pasteur. The success of modern surgical treatment, even with the imperfect knowledge of the bacteria that we now possess, is such that no surgeon thinks for a moment of comparing the results of any given operation with those obtained in the pre-microbic epoch. This comparison, however, only relates to the age of gunpowder, for history tells us with abundant detail, that the ancient treatment of wounds corresponded very closely with our own. The vulnerary compounds of the ancients were largely composed of what we now know as antiseptics; the terebinthinate and metallic dressings of the Alexandrian period we can accept to day as true anti-bacillary agents; and even the boiling oil and the red hot iron, we could now admit as forming an eschar, or impermeable wall against the entrance of microbes. It was aseptic surgery of which the ancients knew nothing. The empirical results of the boiling oil, of the actual cautery, were enough for the ancient masters; like the heroes of Balaklava:

> "Theirs not to reason why;"

they only knew results were satisfactory, wounds healed quickly and without sepsis; what matter if the theory on which their treatment was based—that of arrest of hemorrhage—was faulty, the result satisfied them. Like the blind man of the New Testament the logic was simple: "Whereas I *was* blind, *now* I see;" therefore the touch was adequate. All medical science seems to have run in cycles, and there was less medical superstition in the Alexandrian period, than in medieval medicine—less in the Hindoo charaka than in the pages of Guy de Chauliac or Ambroise Paré. Bacteriology has added much to our knowledge of tuberculosis, and given more precision to its treatment, but that knowledge is still imperfect, and its treatment far from satisfactory. Much less has bacteriology added to our knowledge of the carcinomata, which still remain one of the mysteries of medicine. We have for years studied the varying departures of tissues from the normal to the abnormal type, and bacteriologists have in vain sought to connect the atypical structure of carcinoma with some bacterial development, but no Pasteur or Harvey has yet dawned upon our horizon to pick the lock of a mystery to which Heaven seems to have allowed our generation no key. Looking to the future we can not doubt that the solution of the formation of the carcinomata will yet be discovered, but it will necessarily be through the influence of some now totally unknown factor. The study of embryology and atavism seems at present the most probable avenue to the truth.

What may we hope for the future of surgery?

It seems likely at this day that improvements in technique will continue to occupy the surgical mind until some epoch-making discovery in physiology shall have been made. It is not likely that the present generation of surgeons will witness another discovery as far reaching as that of Pasteur. We must digest and fully assimilate the discoveries of the bacteriological epoch; that process will probably fully occupy our time and that of our immediate successors. It is true that we may have some help from advances in the collateral sciences; transillumination of the body for example, may be yet fully developed in our time, instruments of precision as aids to hearing and vision may greatly assist us in making our present knowledge useful, but the great outlets to human life such as carcinoma, in all probability will have their genesis understood only by the surgeons yet unborn. When that time shall come, carcinoma and tuberculosis will be classed among the preventable diseases. These two affections have cost more human lives annually than cholera or yellow fever, and yet no government has ever set on foot any systematic and regular inquiry into their causation or propagation. It is true that the study of cattle tuberculosis has been the subject of much study by the Bureau of Animal Industry, but so far as the human race is concerned little has been done in the direction indicated.

Colleagues! I feel that I have too long detained you with these speculations, when we have before us a program so rich and so varied, but I can not refrain from expressing my heartfelt congratulations on the success of this meeting, my thanks for your generous response to the call for papers, and as an American surgeon to bid you welcome. Welcome, thrice welcome, foreign colleagues, to our hearts and homes. We pray you to kindly join us in warmest fraternal greetings to our European guests, and let us remember the saying of Livy that true friendships are immortal.

## NECROLOGY.

**Dr. Clinton Armstrong** of Carrollton, Ill., died at Eureka Springs, Ark., August 23, aged 70. He was surgeon of the 61st Ill. Vols. and for many years a member of the Illinois State Medical Society and of this Association.

**Dr. John F. Higgins** of Port Jervis, N. Y., died at the German hospital in that city, Aug. 20, as the result of an accident received Aug. 16. He was a graduate of Bellevue Hospital Medical College class of 1879.

**Dr. Augustus H. Salisbury** of Minneapolis, died in that city, Aug. 26. He was a native of Canandaigua, N. Y., and 53 years of age. He was the first health commissioner of Minneapolis and had practiced there since 1874.

**Dr. Edgar G. Young** died Aug. 17 at his new home in San Diego, Cal. He had been ill with a complication of lung and heart troubles. He was 47 years of age and leaves a widow.

**Dr. D. A. Pancake** died at Columbus, O., Aug. 28. Dr. Pancake was on his way to Columbus, but was taken sick in Cincinnati.

**Dr. Henry H. Darst** of Toledo, O., died in that city Aug. 25, aged 72 years.

**Dr. Woodville S. Bates** of St. Louis, died at Badenweiler, Germany, August 2.

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**A Hospital with a Single Bed.**—This caption is not intended to apply to the average sickroom, but rather to indicate the modest beginnings of a missionary plant in a benighted section of Asia, at the city of Patna. Dr. Grace Mackinnon, in January rented a little mudhouse on the bazaar, and thither sent a patient from the city dispensary whose treatment was impracticable at the patient's own home. Since that time one patient has succeeded another until a series of ten has been under treatment. Other patients take up a temporary abode in some house near the gates of the dispensary, in order to enable the lady physicians to economize their time and steps. "It is the day of small things, but we are very far from despising our hospital with its one bed; far from it; we take great pleasure in it, and we have come to know some of the patients really well by its means."

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SATURDAY, SEPTEMBER 9, 1893.

## THE PAN-AMERICAN MEDICAL CONGRESS.

We publish this week the address of President PEPPER, the address of Surgeon General STERNBERG on Military Surgery, the address of Professor WARREN, Executive President of the Section on Pedagogics; the address of Professor HUGHES, Executive President of the Section on Neurology, and the opening remarks of Professors INGALS and HAMILTON, Executive Presidents respectively of the Sections of Laryngology and General Surgery.

A careful perusal of these addresses will show that, with scarcely an exception, the authors have taken a broader view of the scope of the Congress than a mere professional one.

The Congress is looked upon as the initial step towards cementing the grand brotherhood of American States into commercial and professional union. Political union may not be desirable, but commercial and professional unity of action will develop the Americas as nothing else could develop them. The republican idea, too, will gain new strength throughout the world, as an indirect effect of these periodical exhibitions of power.

## CHOLERA.

The latest advices from Europe show that there is not much change in the cholera situation in Russia, but that the previous ratio of increase is maintained.

In Hungary and Galicia the disease is increasing. It is admitted that in Hungary three hundred communes are infected. In Galicia fifteen districts have been invaded and the disease is still spreading.

On the 1st inst., in Obecoe, in Hungary, there was a cholera riot owing to the removal of the corpse of a cholera patient.

The ignorance and superstition of the people prove a serious obstacle in the way of the authorities in the enforcement of proper sanitary precautions, leading inevitably to the spread of the contagion. This is to be observed in Persia as well as in Hungary. There is no increase in Vienna.

The disease has broken out among the Jeddah pilgrims on the island lying off the city of Mogador in Morocco, as anticipated. We have not yet reliable returns of the instances in which these returning pilgrims have developed the disease or the places to which they have carried it. It is evident, however, that it is no longer confined to the northern shores of the Mediterranean, but is spreading on the southern seacoast as well.

In Italy, Genoa has been reached. New cases have appeared in Alessandria, and several other new points have been reported, but the disease does not seem to be spreading to any great extent. The number of cases has been greater at Palermo than at any other point.

In France, deaths have occurred at Nantes, one of the victims being a physician who had treated cases in hospitals.

New points are constantly infected in Germany, Holland and Belgium, but the authorities are keeping the disease under control wherever it appears. Another death has taken place at Hull. The port of Grimsby in Lincolnshire, has been declared to be infected with cholera, and traffic between it and other British ports has been prohibited. What has become of their *no quarantine* system in England? During August eighty deaths occurred from what was called choleraic disease. It is now believed that many of these were due to cholera. Why was not the character of the disease discovered before? This was to be expected, inasmuch as emigrants from the continent pass through Grimsby in considerable numbers en route for the United States, by way of Liverpool. A number of cases have also been found in Jersey City, the origin of which has not yet been satisfactorily traced. Every effort is being made to prevent the spread of the disease from that point.

## PHYSICIANS CAN HAVE BUT ONE SATISFACTION.

Physicians can have but one satisfaction of their bills. An important illustration of this principle, suggestive of a wide application for it, occurs in the case of WOOD v. MUNSON, decided by the Supreme Court of New York, July 8, 1893, (just reported, 24 N. Y. Supp. 286). Here a physician and health officer of a town attempted, by way of counter claim, in a suit brought against him, to collect the balance of his charge for attending a family through an epidemic after a portion of his bill had been allowed by the town. The court, however, said that the physician having presented his bill to the auditors of the town was evidence, as against him, that he was employed by the town to attend the family in question. The fact that the auditors allowed a portion of his charge was also evidence to show such employment.

They would have no right to make him a present or to make him any allowance on account of such services unless a legal charge against the town. The presentation, audit, and acceptance of what was allowed him, extinguished his claim. When he voluntarily presented his bill as a claim against the town, the audit of the town board was a legal adjudication of the amount due thereon. Moreover, if there were any liability on the part of the person whose family was attended, as well as the town, for such attendance, which the physician might have properly claimed, his presentation of a bill to the town, and acceptance of the amount at which it was audited, must have had the effect of also extinguishing the claim as against such person. Where a debt owed by two joint and several debtors, is satisfied by either, nothing remains for either to pay. If the debt is once satisfied, to allow recovery again, even if against another person, would be to allow a satisfaction twice upon one debt. So when the physician above mentioned presented his claim to the town auditors as against the town, and accepted the sum that they allowed thereon in payment, the transaction extinguished his claim against the head of the family attended, if any such claim ever existed.

## THE NEW PHARMACOPŒIA.

A new revision of the Pharmacopœia has just been placed upon our table. We will give it careful review as soon as practicable. At a hasty glance the publication shows that many changes have been made; a great many drugs have been dropped from the former list and many new preparations added. It has been revised with more care than any previous edition, and gives evidence of high scholarship and a thorough understanding of the necessities of the profession. The last revision of the Pharmacopœia prepared the way for the decimal system of weights and measures by providing that medicinal preparations should be composed of parts by weight. In this edition, the decimal or metric system is employed in the compounding of preparations throughout without qualification or translation. This change must be approved by all who appreciate simplicity in our system of weights and measures, and we predict that by the time the next revision shall take place the medical profession will have generally adopted the decimal form in prescription writing. The form is so easy and simple when compared with the complicated system of grains, scruples, drachms and ounces, as to make it a matter of wonder that the decimal system should have so much difficulty in the way of its adoption.

When it shall have become generally used it will be as impossible to return to the present English system as it would be for our bankers and business men, generally, to return to the English monetary system and account for financial transactions in pounds, shillings and pence. To be sure, there will be some difficulty in the minds of those long accustomed to a certain method, whatever that method may have been, but the medical profession, ever progressive, will soon adapt itself to the changes made necessary by the advances of science. We sincerely hope that no misguided person will publish sets of complicated rules for the conversion of the English system into metric doses, for the reason that it is not rules for conversion that are now needed. The prescriber should learn the dose of his preparation or drug according to the decimal doses; then when a single dose shall have been learned it is only necessary to multiply the units of that dose by the number of doses he wishes to administer. Complicated rules for conversion have long stood in the way of the practical adoption of the decimal system. Let us have dose tables in convenient form for immediate reference, that can be carried as a memorandum in the pocket and a moment's reference, then, will refresh the mind as to the exact dose and there need be no danger of making mistakes.

The American Metrical Bureau of Boston long ago published dose tables, with statements according with the foregoing remarks, but as time has gone on they have passed out of the minds of many and it is again necessary to bring them into view. The American medical gentlemen of the future will be astonished to find that more than a quarter of a century was required to effect the change from an arbitrary to a decimal system of doses after a hundred years of trial of the same system in the coinage of the country.

In our review columns we will again refer to some of the more prominent features of the Pharmacopœia.

## SOCIETY NEWS.

**Mississippi Valley Medical Association** meets October 4, 5 and 6, 1893, at Indianapolis. R. Stansbury Sutton, M.D., president, Pittsburg; F. C. Woodburn, M.D., secretary, Indianapolis; A. M. Owen, M.D., treasurer, Evansville, Ind.; G. J. Cook, M.D., chairman committee of arrangements, Indianapolis.

### PROVISIONAL PROGRAM.

Allen, S. E., Cincinnati. Paper.

Aulde, John, Philadelphia, Pa., "Cellular Therapy; its practical adaptation in the rational Treatment of Disease."

Banker, A. J., Columbus, Ind., "Some Practical Points in the Treatment of Abscesses and Tuberculous Glands."

Barr, A. B., Calimine, Ark., "The Physiology of Conception."

Bauer, Joseph L., St. Louis, "The Treatment of Hip Joint Disease as related to its Etiology."

Bauer, Louis, St. Louis, "Incurability of advanced and extreme Cases of Talipes Equino-varus by the Methods and Means in Vogue at the present Time. Suggestions of a Way to remove the Deformity, without disturbing the Usefulness of the Extremity."

Berghoff, J. T., St. Joseph, Mo., "Treatment of Fractures of the Leg."

Bishop, Seth S., Chicago, "Treatment of Mastoid Disease, with Operations."

"Bloom, N., Louisville, "Electrolysis in the Removal of superfluous Hairs."

Brayton, A. W., Indianapolis, "Presentation of Cases of Skin Diseases—*a*, Sarcoma of the Face, with Sections; *b*, Lupus Deformans; *c*, Xeroderma Pigmentosum."

Carpenter, J. G., Stanford, Ky., "Strictures of large Caliber; Follicular Urethritis; Urinary Infiltration; Abscess; Two Cases; Recovery."

Cartledge, A. Morgan, Louisville, "Shall we Operate in all Cases of Appendicitis?"

Cheatham, Wm., Louisville, "Medical Ophthalmoscopy."

Comegys, C. G., Cincinnati, "Medical Jurisprudence."

Corlett, Wm. T., Cleveland, O., "Pemphigus; its Varieties, Cause and Treatment, with a Report of some unusual Cases."

Crothers, T. D., Hartford, Conn., "The Medical Treatment of Inebriety."

Cox, N. D., Spencer, Ind. Paper.

Culbertson, J. C., Cincinnati, "Diphtheria."

Cutter, Ephraim, New York, "The Treatment of Sclerosis of the Spine."

*Davis*, *Wm. H.*, Denver, *Col.* Paper.

Dewees, Wm. B., Salina, Kan., "The Erect Posture for Gynecological Examinations."

Devilbiss, Allen, Toledo, O., "New Devices for Cutting *Bone*."

Dixon, Arch., Henderson, Ky. Paper.

Dunning, L. H., Indianapolis. Paper.

Eichburg, Joseph, Cincinnati, "Essential Paroxysmal Tachycardia."

Everts, Orpheus, College Hill, O., "Problems of Public Interest concerning the Insane."

Galloway, Wm. A., Xenia, O., "*Diphtheria*; a Treatment giving a low Death Rate in Hospital and Private Practice"

Gibbes, Henneage, Ann Arbor, "The History of a Case of Phthisis Treated with Gold and Iodin, and where Inoculations of Guinea Pigs with the Sputum was kept up until it became Innocuous."

Hall, Rufus, Cincinnati. Paper.

Hayes, D. J, Milwaukee, "Some Points on the Surgery of the *Prostate*."

Heath, F. C., Indianapolis, "Hygiene of the Eye."

Hibberd, Jas. F., Richmond, Ind., "Address on General Medicine."

Hodges, Fred. Jenner, Anderson, Ind, "Continuous Submersion in Infected Wounds of *the* Extremities."

Holmes, Bayard, Chicago, Paper.

Humiston, Wm. H., Cleveland, "The Treatment of the Diseases of the Uterine Appendages."

Hutchinson, Wm. F, Providence, R. I., "Electrical Anæsthesia; *further* Studies."

Kieper, G. F., Lafayette. Ind., "Etiology of Deafness and its Prevention."

Kellogg, J. H., Battle Creek, Mich., "A Critical Study of the Symptomatology of the Disorders of Digestion."

Kemper, G. W. H, Muncie, Ind., "A *Case* of Senile Gangrene Treated by Amputation."

Lamphear, Emory, Kansas City, "Surgery of the Cranium; what is the proper Treatment?"

Lash, H. M., Indianapolis, "Chorea; its Etiology and Treatment."

Lewis, Bransford, St. Louis, "The Pathological Anatomy of Urinary Retention, with Deduction as to Treatment"

Link, Wm. H., Petersburgh, Ind., "The Value of a *Close* Observation of other Men's Work."

Loeb, H. W., St. Louis, "Some Illustrative Cases of Nasal Headache."

Love, I. N., St. Louis, "Chorea in its Relation to Rheumatism."

Lydston, G. Frank, Chicago, "Some Heresies regarding Prostatic Pathology."

McFarland, Anne H., Jacksonville, Ill., "The Classification of the Insane."

McGraw, Theo. A., Detroit. Paper.

McGahan, Chas F, Bethlehem, N. H., "Physical Culture in Pulmonary Disease."

McMurtry, L. S., Louisville. Paper.

Marcy, H. O., Boston, "Address on Surgery—The *Anatomy* and *Surgical* Treatment of Inguinal Hernia in the Male."

Mathews, Joseph M., *Louisville*, "*Ulceration* of the Rectum; its Etiological Treatment."

Meachem, J. G., Racine, Wis., "Lung Diseases as they occur *on the Shores* of *Lake* Michigan."

Moulder, J. McLean, Kokomo, Ind., "Brain Surgery, with Report of Cases."

Mitchell, Giles S., Cincinnati. Paper.

Murphy, J. B., *Chicago*, "*Perforative Peritonitis*."

Norbury, Frank P., Jacksonville, Ill., "Medico-Legal Aspects of Brain Tumors."

Ohmann-Dumesnil, A. H., St. Louis, "Chancroid of the Eyelid."

Oliver, J. C., Cincinnati, "Tubercular Disease of the Tarsus; Surgical Treatment; Results.

Page, L. F., Indianapolis, "Hay Fever."

Pantzer, H. O., *Indianapolis*, "*The Pathology and Principles* of Treatment of Asthma."

Price, Joseph, Philadelphia, "Why Gynecology and Obstetrics should be in the Hands of Specialists."

Quimby, I. N, Jersey *City*, N. J., "A *New Method of* Operating at the Ankle Joint for Injuries of the Foot."

Ravogli, A., Cincinnati, "Cutaneous Psorospermosis."

Reamy, Thad. A., Cincinnati, "Evolution in the Treatment of Uterine Fibroids *since* My *Entrance into* the Profession."

Ray, J. M., Louisville, "The Nose and Naso-Pharynx in their Relation to Suppurative Diseases of the Middle Ear."

Ricketts, B. Merrill, Cincinnati, "Report of Surgical Cases with Photographs."

"Ridlon, John, Chicago, "Differential Diagnosis and Principles of Treatment of *Hip Joint Disease*."

Sattler, Eric E., Cincinnati. Paper.

Sexton, J. C., Rushville, Ind., "Study of a Fatal Case of Essential Tachycardia."

Scott, M. T., Lexington, Ky., "Septic Infection of the Newborn."

Stearne, Albert E., Indianapolis. Paper.

Stewart, F. E., Watkins, N. Y., "Some of the Treatments Employed in Sanitariums."

Stemen, C. B., Fort Wayne, Ind., "Antiseptic Precautions in Railway Injuries."

Straus, Leon, St. Louis, "A Plea for more Frequent and Earlier Colotomy in Painful Malignant Diseases of the Rectum."

Sutton, R. Stansbury, Pittsburgh, "President's Address."

Thornbury, *Frank J.*, *Buffalo*, N. Y., "The Bacteria of the Surface; Disinfection of the Latter; Non-Utility of Antiseptics."

Thorner, Max, Cincinnati, "Modern Methods of Treating Ear Diseases."

Todd, Lyman Beecher, Lexington, Ky., "Certain Diseases of Infancy; their Prevention."

Vernon, Geo. W., Indianapolis, "Infantile Therapeutics."

Von Klein, Carl H., Cleveland, "Nasal *and Post-Nasal* Vegetations."

Von Ruck, Karl, Asheville, N. C. Paper.

Walker, H. O, Detroit, Mich., "Kraske's Operation, with Report of Cases."

Walker, Edwin, Evansville, Ind., "Reflex Irritation as a Cause of Disease."

Werder, X. O., Pittsburgh, "The Present Status of the Treatment of Uterine Fibroids."

Webster, Geo. W., Chicago. Paper.

Wirt, *Wm.* E., Cleveland, "Treatment of Old and Neglected Cases of Hip Disease."

Wishard, Wm. N., Indianapolis. Paper.

Wood, E. A., Pittsburgh, "Therapy of Gold."

# DOMESTIC CORRESPONDENCE.

## Staff Correspondence of The Journal.

Journal Train, C. & O. R. R., Sept. 3, 1893.

The Journal train left Central depot on time at 8:30 and traveled through the country without incident until *nearing Indianapolis*, where it was delayed an hour and a half by a wrecked freight train. The train service was excellent and the doctors, although delayed, preserved their equanimity and arrived *in Cincinnati* in good order. The St. Louis contingent were delayed for some reason or other and did not unite with the train at Indianapolis as was expected. The following named gentlemen among others were on the train:

Mr. Ernest Hart, editor *British Medical Journal*, and Mrs. Hart; Dr. Daniel R. Brower, Chicago; Dr. J. R. Wolfe (Prof. Ophthal., Glasgow); Dr. J. W. McLaughlin, *Dr.* E. H. Root, Dr. A. M. Bromworth, Dr. C. M. Hobby, Iowa City; Dr. Bayard Holmes, Dr. E. F. Ingals, Dr. R. C. Corr, Carlinville, Ill.; Dr. S. H. Stevenson, Dr. S. S. Bishop and Mrs. Bishop, Dr. Geo. H. Cleveland, Dr. F. C. Green, Dr. W. Y. Dougall, Joliet, Ill.; Dr. P. C. Coleman, Colodo, Texas; Dr. James M. Craighill, Baltimore; W. J. Williams, Odell, Ia.; J. W. C. Love, City of Mexico; the editor of the Journal and Mrs. Hamilton. Mrs. Holland, the stenographer of the Chicago Medical Society, was also of the party.

At Indianapolis the party were called upon by Dr. Woodburn and others who wore badges showing that they were on the Reception committee of the Grand Army of the Republic, which meets in Indianapolis this week. The city of Indianapolis was gaily decorated with flags, and presented the appearance of a place about to have a great fair or public entertainment. We were told that 200,000 strangers were already in Indianapolis attending the Grand Army encampment.

## Prof. Weismann's Theories.

A late thoughtful editorial in The Journal on "Studies of Heredity," commenting on Dr. Weismann's published essays on this subject, seems to endorse the German professor's doctrines as the latest accepted conclusions of science. No mention is made of the widespread criticisms which Weismann's theories have called forth, the most notable of which perhaps are from the pen of Herbert Spencer in the *Contemporary Review*. After expressing surprise at the wide acceptance of Prof. Weismann's theories by the biological world. Mr. Spencer proceeds to show that the most fundamental proposition in his "Essays"—that on which the whole superstructure of his biological arguments rest—is untenable.

Prof. Weismann's primary contention is that animal organisms consist essentially of two kinds of ultimate cells —the somatic or nutritive cells and the reproductive germ cells; that the former are perishable but that the latter are immortal; that is, that in the propagation of the species from generation to generation, the reproductive cell is transmitted as such, retaining its distinctive nature in contrast with the somatic cell which varies according to the nutritive functions performed by it, and finally perishes when nutrition ceases. In a summary way and with masterly skill, Mr. Spencer entirely demolishes this theory. He proves conclusively that in important divisions of the animal kingdom, the alleged reproductive cell is wholly dispensed with for many generations together. Therefore, the transmission of hereditary qualities can not reside in the substance of these germ cells. Even in vertebrates, Weismann admits that the distinction between the two kinds of cells is not evident until the embryo is completely formed. Only nutritive cells during this period can be shown to exist. But the impress of heredity marks this period as plainly as any later stage in the development of the organism. Hence, Weismann's assumption becomes pure supposition.

The further assumption that acquired traits in the parent can not be transmitted to the offspring because the germ plasm from generation to generation is continuous and immortal and therefore unvarying, is shown to be equally without foundation. The great English scientist in his discussion appeals constantly to facts. And it is by an array of incontrovertible facts that the German professor's theories are upset. He shows conclusively that acquired traits *are* transmitted, not only in the human species but also in the animal kingdom generally. The evidence presented on this point by Mr. Spencer would seem to be sufficient to settle finally the vexed question of the transmissibility of acquired traits.

Aside from the interest attaching to the consideration of the problems presented in Dr. Weismann's book, the discussion is extremely interesting as illustrating the different methods by which the ultimate truth is reached through scientific research. Theories are as necessary in scientific investigations as facts. But the observed facts must support the theories. Dr. Weismann insists upon this and, like Mr. Spencer, makes his appeal also to the facts. But when the facts are observed through the false medium of an erroneous theory, the facts themselves become distorted, and it is not every mind that can allow for the aberration. Here is Prof. Weismann's weak point. In his eagerness to sustain his contention, he permits himself to bridge over great gaps in his theories by supplying suppositions. And through these gaps Mr. Spencer comes up with a phalanx of adverse facts which completely demolish the theories.

Prof. Weismann's books on this subject represent, no doubt, the work of a lifetime. His writings bear the impress of great erudition, and of elaborate, painstaking workmanship. Upon the soundness of the biological views advanced and advocated, the author has evidently staked his reputation as a man of science. To see these works rudely assailed and their fundamental doctrines discredited seems pitiless and unkind. But it is thus that science makes advances. No fabric that rests upon false foundations, however famous the architect or imposing the structure, may rest secure from her attacks. And in the onslaught against all forms of erroneous belief, the one trait of judicial mindedness counts for more in the outcome than all the other qualifications besides of the investigator. Here is where Mr. Spencer stands preëminent, and his methods are models for study for any who may have the inclination or the aptitude for scientific investigation. James L. Taylor, M.D.

## The Pensacola Board of Health.

Pensacola, Fla., Aug. 26th, 1893.

*To the Editor*—Sir:—As requested, the following statement of the reported outbreak of yellow fever in the city of Pensacola, Florida, is made for the Journal of the American Medical Association:

On August 9th, the attending physician reported that Rev. F. C. Waite and Ellen Wood had died that morning of yellow fever. This report came to the Board of Health without any previous notice of even a suspicion of the existence of yellow fever in the city. Steps were immediately taken to isolate and guard the premises where those deaths had occurred, both of which are in the northern part of the city, and separated about five blocks. An autopsy was held during the afternoon of the same day, and the physicians performing the same, decided that both deaths had been caused by yellow fever.

Upon this, the county health authorities gave notice by wire to the State and the United States health authorities, and also to the Health Boards of adjacent States. Joseph Y. Porter, M.D., State Health Officer of Florida, arrived on the night of the 10th and next morning assumed official charge of the investigation of the decision of the reporting physicians, and the probable origin of the contagion. Under the direction of the State Health Officer, acting through the County Board of Health, a house-to-house inspection was at once begun and vigorously prosecuted, and in the meantime measures were taken to trace every rumored suggestion as to how yellow fever might have reached this city. P. A. Surgeon, G. M. Magruder of the Marine Hospital Service, arrived here on the evening of the 11th, and

Surgeon H. R. Carter of the Marine Hospital Service arrived on the morning of the 12th. These gentlemen entered at once into hearty coöperation with State Health Officer, Dr. Joseph Y. Porter, in carrying out his plan of investigation.

On Monday, Aug. 14th, the following official bulletin was published by the State Health Officer:

OFFICE OF THE STATE HEALTH OFFICER OF FLORIDA.

PENSACOLA, FLA., Aug. 14th, 1893.

*To the Public:*—The State Health Officer of Florida announces that an investigation in the cause of death of Rev. F. C. Waite and Ellen Wood, who were reported to have died of yellow fever in the city of Pensacola on the 9th day of August, has been thoroughly and impartially made, in which he has been ably assisted by Surgeons H. R. Carter and G. M. Magruder of United States Marine Hospital Service.

These gentlemen agree with the conclusions herein expressed.

These cases were not seen either in life or after death, and therefore the opinions hereinafter noted are based on:

The clinical history of the cases.

The record of antopsies, and the statements of the relatives, nurses and friends of the decedents who were in attendance during their late illness.

There is nothing in the clinical history of the autopsy of the Rev. Waite to justify a diagnosis of yellow fever. On the contrary he seems to have died from acute gastroenteritis with marked abdominal symptoms.

In the case of the child, Ellen Wood, the opinion is given, that while the record of the case clinically and from the autopsy, does not give a clear history of yellow fever, yet it contained sufficient evidence to justify the statement that the case was "suspicious," and demands precautionary surveillance and disinfection of the dwelling and its contents, together with the premises.

At this present time there have been no other cases of yellow fever nor suspicious cases reported. A house-to-house inspection, which has been made within the last three days and is now completed, discovers no sickness of a suspicious nature among the residents of the city.

[Signed] JOSEPH Y. PORTER,
State Health Officer.

Surgeon R. D. Murray, the distinguished yellow fever expert of the Marine Hospital Service, arrived on the night of the 14th and after a thorough examination of the whole matter, fully concurred in the opinion of the State Health Officer and the concurring surgeons, as expressed in the bulletin of the 14th. And it is proper to add that the statements therein made were in full accord with the opinion of the local health authorities.

As further history of the reported outbreak and investigation, an extract is here quoted from an official announcement by the State Health Officer on Aug. 18th:

OFFICE OF THE STATE HEALTH OFFICER OF FLORIDA.

PENSACOLA, FLA., Aug. 18th, 1893.

*To the Public:*—The State Health Officer expresses the belief that the fears and apprehensions of the health of Pensacola, which for the past week have agitated the public, involving the interdiction of travel and the consequent embarrassment to commerce, should now cease.

Of the reported deaths on the 9th inst., a thorough and impartial investigation into the history of the cases confirms the opinion heretofore announced that the Rev. Waite did not die from yellow fever, and that the death of the child, Ellen Wood, from the history, was of such a doubtful nature as to only warrant the disinfection of the dwelling as a sanitary measure, which precaution the public was entitled to receive by reason of this element of doubt. This has been done under the direct supervision of the State and United States government officers.

Since this investigation was begun and during the entire progress, the State Health Officer has been cognizant of all diseases and ailments which have existed or occurred in Pensacola, and is able to aver that no cases have occurred of a quarantinable contagious nature. This fact, coupled with the long period of active and retrospective observation, warrants the statement that there are no hidden causes which may produce it.

A notable fact in connection with these cases is that during their occurrence no precautions were taken to prevent any possible infection from them, and free and unrestricted communication was had with each, notwithstanding which, there have been no developments of a suspicious nature among the non-immune so exposed; and further, that the meteorological conditions during that period were peculiarly inducive of yellow fever, had the germs of the disease been introduced in the place.

Under orders from the Department, Surgeon Carter left Pensacola for Brunswick, Ga., on the 14th, but the investigation into the sanitary condition of the city was continued until 6 P. M. on the 19th, and the result is set forth in the following bulletin issued at that date:

THE CITY'S HEALTH.

Now that the yellow fever scare is a thing of the past in Pensacola, those who fled from the city when the alarm was given should be coming home to take part in restoring business to its accustomed channels. A great many have already returned, and those who yet remain away need feel no hesitation in coming back. The city was never more healthy, and the following, which is printed as a part of the history of the scare, should assure every one who has a lingering doubt of the real condition of affairs here:

PENSACOLA, FLA., Aug. 18, 1893.

We, the undersigned representatives of the health departments of the State of Florida, the United States of America and the City of Pensacola, do hereby announce that after a thorough and careful inspection of this city, we have failed to find the existence of any infectious disease whatever.

[Signed] Respectfully, JOSEPH Y. PORTER,
State Health Officer.
R. D. MURRAY,
Surgeon U. S. Marine Hospital Service.
G. M. MAGRUDER,
P. A. Surgeon U. S. Marine Hospital Service.
ROBERT W. HARGIS,
Pres. Escambia County Board of Health.

Very truly yours,
ROBERT W. HARGIS,
Pres. Escambia Board of Health.

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## Wants Cerebrine.

*To the Editor—Dear Sir:*—Will you kindly insert the communication herewith transmitted, in your correspondence column, and oblige. Very truly yours,

G. ARCHIE STOCKWELL.
650 Congress street, E. Detroit, Mich.

**$5.00 Reward.**—The undersigned will pay $5.00 each for a few bottles of cerebrine (Hammond) of the lot issued by the Columbian Chemical Co. in May, 1893. This cerebrine was devoid of sophistication by nitroglycerin, and moreover did not have the label of the Columbian Chemical Co., cross-stamped by fac simile in red of Hammond's signature.

Address DR. ARCHIE STOCKWELL.
650 Congress street, E. Detroit, Mich.

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# BOOK NOTICES.

**A Manual of Diseases of the Ear.** By GEORGE P. FIELD, M.R.C.S., Aural Surgeon and Lecturer on Aural Surgery, St. Mary's Hospital, Medical School, London. In one octavo volume of 391 pages, with seventy-three engravings and twenty-one colored plates. Cloth $3.75. Philadelphia: Lea Brothers & Co., 1893.

The American publishers of the fourth edition of Field's work on "Diseases of the Ear" have furnished to American readers an excellent work on otology.

The first thirty-two pages are devoted to the anatomy of the ear illustrated by twenty-seven woodcuts.

Dr. A. M. Bromworth, Dr. C. M. Hobby, Iowa City; Dr. Bayard Holmes, Dr. E. F. Ingals, Dr. R. C. Corr, Carlinville, Ill.; Dr. S. H. Stevenson, Dr. S. S. Bishop and Mrs. Bishop, Dr. Geo. H. Cleveland, Dr. F. C. Green, Dr. W. Y. Dougall, Joliet, Ill.; Dr. P. C. Coleman, Colodo, Texas; Dr. James M. Craighill, Baltimore; W. J. Williams, Odell, Ia.; J. W. C. Love, City of Mexico; the editor of the JOURNAL and Mrs. Hamilton. Mrs. Holland, the stenographer of the Chicago Medical Society, was also of the party.

At Indianapolis the party were called upon by Dr. Woodburn and others who wore badges showing that they were on the Reception committee of the Grand Army of the Republic, which meets in Indianapolis this week. The city of Indianapolis was gaily decorated with flags, and presented the appearance of a place about to have a great fair or public entertainment. We were told that 200,000 strangers were already in Indianapolis attending the Grand Army encampment.

## Prof. Weismann's Theories.

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The further assumption that acquired traits in the parent can not be transmitted to the offspring because the germ plasm from generation to generation is continuous and immortal and therefore unvarying, is shown to be equally without foundation. The great English scientist in his discussion appeals constantly to facts. And it is by an array of incontrovertible facts that the German professor's theories are upset. He shows conclusively that acquired traits *are* transmitted, not only in the human species but also in the animal kingdom generally. The evidence presented on this point by Mr. Spencer would seem to be sufficient to settle finally the vexed question of the transmissibility of acquired traits.

Aside from the interest attaching to the consideration of the problems presented in Dr. Weismann's book, the discussion is extremely interesting as illustrating the different methods by which the ultimate truth is reached through scientific research. Theories are as necessary in scientific investigations as facts. But the observed facts must support the theories. Dr. Weismann insists upon this and, like Mr. Spencer, makes his appeal also to the facts. But when the facts are observed through the false medium of an erroneous theory, the facts themselves become distorted, and it is not every mind that can allow for the aberration. Here is Prof. Weismann's weak point. In his eagerness to sustain his contention, he permits himself to bridge over great gaps in his theories by supplying suppositions. And through these gaps Mr. Spencer comes up with a phalanx of adverse facts which completely demolish the theories.

Prof. Weismann's books on this subject represent, no doubt, the work of a lifetime. His writings bear the impress of great erudition, and of elaborate, painstaking workmanship. Upon the soundness of the biological views advanced and advocated, the author has evidently staked his reputation as a man of science. To see these works rudely assailed and their fundamental doctrines discredited seems pitiless and unkind. But it is thus that science makes advances. No fabric that rests upon false foundations, however famous the architect or imposing the structure, may rest secure from her attacks. And in the onslaught against all forms of erroneous belief, the one trait of judicial mindedness counts for more in the outcome than all the other qualifications besides of the investigator. Here is where Mr. Spencer stands preëminent, and his methods are models for study for any who may have the inclination or the aptitude for scientific investigation. JAMES L. TAYLOR, M.D.

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*To the Editor*—Sir:—As requested, the following statement of the reported outbreak of yellow fever in the city of Pensacola, Florida, is made for the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

On August 9th, the attending physician reported that Rev. F. C. Waite and Ellen Wood had died that morning of yellow fever. This report came to the Board of Health without any previous notice of even a suspicion of the existence of yellow fever in the city. Steps were immediately taken to isolate and guard the premises where those deaths had occurred, both of which are in the northern part of the city, and separated about five blocks. An autopsy was held during the afternoon of the same day, and the physicians performing the same, decided that both deaths had been caused by yellow fever.

Upon this, the county health authorities gave notice by wire to the State and the United States health authorities, and also to the Health Boards of adjacent States. Joseph Y. Porter, M.D., State Health Officer of Florida, arrived on the night of the 10th and next morning assumed official charge of the investigation of the decision of the reporting physicians, and the probable origin of the contagion. Under the direction of the State Health Officer, acting through the County Board of Health, a house-to-house inspection was at once begun and vigorously prosecuted, and in the meantime measures were taken to trace every rumored suggestion as to how yellow fever might have reached this city. P. A. Surgeon, G. M. Magruder of the Marine Hospital Service, arrived here on the evening of the 11th, and

Surgeon H. R. Carter of the Marine Hospital Service arrived on the morning of the 12th. These gentlemen entered at once into hearty coöperation with State Health Officer, Dr. Joseph Y. Porter, in carrying out his plan of investigation.

On Monday, Aug. 14th, the following official bulletin was published by the State Health Officer:

OFFICE OF THE STATE HEALTH OFFICER OF FLORIDA.

PENSACOLA, FLA., Aug. 14th, 1893.

*To the Public:*—The State Health Officer of Florida announces that an investigation in the cause of death of Rev. F. C. Waite and Ellen Wood, who were reported to have died of yellow fever in the city of Pensacola on the 9th day of August, has been thoroughly and impartially made, in which he has been ably assisted by Surgeons H. R. Carter and G. M. Magruder of United States Marine Hospital Service.

These gentlemen agree with the conclusions herein expressed.

These cases were not seen either in life or after death, and *therefore the opinions hereinafter* noted are based on:

The clinical history of the cases.

The record of autopsies, and the statements of the relatives, nurses and friends of the decedents who were in *attendance during their late illness.*

There is nothing in the clinical history of the autopsy of the Rev. Waite to justify a diagnosis of yellow fever. On the contrary he seems to have died from acute gastroenteritis *with* marked abdominal symptoms.

In the case of the child, Ellen Wood, the opinion is given, that while the record of the case clinically and from the autopsy, does not give a clear history of yellow fever, yet it contained *sufficient* evidence to justify the statement that the case was "suspicious," and demands precautionary surveillance and disinfection of the dwelling and its contents, together with the premises.

*At this present time* there have been no other cases of yellow fever nor suspicious cases reported. A house-to-house inspection, which has been made within the last three days and is now completed, discovers no sickness of a *suspicious nature* among the residents of the city.

[Signed] JOSEPH Y. PORTER,
State Health Officer.

Surgeon R. D. Murray, the distinguished yellow fever expert of the Marine Hospital Service, arrived on the night of the 14th and after a thorough examination of the whole matter, fully concurred in the opinion of the State Health Officer and the concurring surgeons, as expressed in the bulletin of the 14th. And it is proper to add that the statements therein made were in full accord with the opinion of the local health authorities.

*As further history* of the reported outbreak and investigation, an extract is here quoted from an official announcement by the State Health Officer on Aug. 18th:

OFFICE OF THE STATE HEALTH OFFICER OF FLORIDA.

PENSACOLA, FLA., Aug. 18th, 1893.

*To the Public:*—The State Health Officer expresses the belief *that the* fears and apprehensions of the health of Pensacola, which for the past week have agitated the public, involving the interdiction of travel *and the consequent* embarrassment to commerce, should now cease.

Of the reported deaths on the 9th inst., a thorough and impartial investigation *into the history* of the cases confirms the opinion heretofore announced *that the* Rev. Waite did not die from yellow fever, and that the death of the child, Ellen Wood, from the history, was of such a doubtful nature as to only warrant the *disinfection* of the dwelling as a sanitary measure, which precaution *the* public was entitled to receive by reason of this element of doubt. This has been done under the direct supervision of the State and United States *government* officers.

Since this investigation was begun and *during* the entire progress, the State Health Officer has been cognizant of all diseases and ailments which have existed or occurred in Pensacola, and is able to aver *that* no cases have occurred of a quarantinable contagious nature. *This fact,* coupled with the long period of active and retrospective observation, warrants the statement that there are no hidden causes which may produce *it.*

A notable fact in connection with these cases is that during their occurrence no precautions were taken to prevent any possible infection from them, and free and unrestricted communication was had with each, notwithstanding which, there have been no developments of a suspicious nature among the non-immune so exposed; and further, that the meteorological conditions during that period were peculiarly inducive of yellow fever, had the germs of the disease been introduced in the place.

Under orders from the Department, Surgeon Carter left Pensacola for Brunswick, Ga., on the 14th, but the investigation into the sanitary condition of the city was continued until 6 P. M. on the 19th, and the result is set forth in the following bulletin issued at that date:

THE CITY'S HEALTH.

Now that the yellow fever scare is a thing of the past in Pensacola, those who fled from the city when the alarm was given should be coming home to take part in restoring business to its accustomed channels. A great many have already returned, and those who yet remain away need feel no hesitation *in coming* back. *The city was never more* healthy, and the following, which is printed as a part of the history of the scare, should assure every one who has a lingering doubt of the real condition of affairs here:

PENSACOLA, FLA., Aug. 18, 1893.

We, the undersigned representatives of the health departments of the State of Florida, the United States *of America.* and the City of Pensacola, do hereby announce that after a thorough and careful inspection of this city, we have failed to find the existence of any infectious disease whatever.

[Signed] Respectfully, JOSEPH Y. PORTER,
State Health Officer.
R. D. MURRAY,
Surgeon U. S. Marine Hospital Service.
G. M. MAGRUDER,
P. A. Surgeon U. S. Marine Hospital Service.
ROBERT W. HARGIS,
Pres. Escambia County Board of Health.

Very truly yours,
ROBERT W. HARGIS,
Pres. Escambia Board of Health.

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### Wants Cerebrine.

*To the Editor—Dear Sir:*—Will you kindly insert the communication herewith *transmitted,* in your correspondence column, and oblige. Very truly yours,

G. ARCHIE STOCKWELL.

650 Congress street, E. Detroit, Mich.

**$5.00 Reward.**—The undersigned will pay $5.00 each for a few bottles of cerebrine (Hammond) of the lot issued by the Columbian Chemical Co. in May, 1893. This cerebrine was devoid of sophistication by nitroglycerin, and moreover did *not have* the label of the Columbian Chemical Co., cross-stamped by fac simile in red of Hammond's signature.

Address DR. ARCHIE STOCKWELL.
650 Congress street, E. Detroit, Mich.

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## BOOK NOTICES.

**A Manual of *Diseases* of the Ear.** By GEORGE P. FIELD, M.R.C.S., Aural *Surgeon* and Lecturer on Aural Surgery, St. Mary's Hospital, Medical School, London. In one octavo volume *of* 391 pages, with seventy-*three* engravings *and twenty*-one colored plates. Cloth $3.75. Philadelphia: Lea Brothers & Co., 1893.

The *American* publishers of the fourth edition of Field's work on "Diseases of the Ear" have furnished to American readers an excellent work on otology.

The first *thirty-two* pages are devoted to the anatomy of the ear illustrated by twenty-seven woodcuts.

Nine pages are devoted to its physiology, with one illustration giving diagrammatic view of the organ of hearing.

Twelve pages, with six illustrations, are devoted to the methods of examination of the ear. The next fourteen chapters deal with diseases of the ear.

Chapter eighteen treats of deaf-mutism, its causes and statistics, as well as methods of instructing deaf mutes. The final chapter is on aids to hearing including ear trumpets, artificial membrane, audiphones and rodosteophones. The three chapters in which diseases of the auricle and external meatus are considered, give a full exposition of the diseases and accidents to that part of the ear, with which the general practitioner of medicine has more especially to deal, and will be of interest to them as well as to otologists.

The next seven chapters are devoted to the membrana tympani and the middle ear where the interest of otologists largely centers, since most of the affections and injuries of these parts are most dangerous to hearing, and not infrequently to the life of the patient.

Chapter fifteen deals with the most difficult part of the hearing apparatus—the internal ear or perceptive apparatus.

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The illustrations of the work are fair, but most of the chromo-lithographs can scarcely be considered more successful than such efforts in the field of surgery usually are, when too often they are only misleading. Figure 53 is given as "method of passing the Eustachian catheter," but it is so evidently a mistake that no one would be likely to be led to believe otherwise.

The work as a whole will be welcomed by the medical public.

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The apparatus by which this is accomplished consists of two pumps, one of which takes in pure gas and the other pure air as a basis of measurement. The cylinder is arranged so that any desired percentage of gas in conjunction with air can be produced, while the component parts always equal 100. The product of the two cylinders is pumped into the igniting chamber, which has an aperture in front of a gas jet. Should the mixture be ignitable, ignition will immediately take place and the expansion caused by the heat propels a loose piston head at the end of the chamber against a gong, which is caused to sound.

As can readily be seen, the percentage of explosive gas is accurately obtained.

By means of the comparative turpidity of $CO_2$, in lime water, this apparatus ascertains the percentage of $CO_2$ in the exhalation of the breath and thereby determines the condition of the lung tissue. In the treatment of consumptives this discovery is of great benefit to the medical profession, as an opportunity is given to watch the daily progress of the disease.

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**There is nothing hazy about the Surgeon General of Siam.**—Dr. T. H. Hayes, a graduate of the Maryland University, and a few years ago a struggling drug clerk, is now, although still a young man, surgeon general of the Siamese army and physician to the household of the king. He is also at the head of large educational institutions, which he has modeled after prominent schools of learning in Baltimore, is in charge of all the hospitals, and, moreover, frequently preaches to the natives and foreign residents, being an accredited minister of the Presbyterian church. He receives from the king a salary of seven thousand dollars a year and perquisites.—*La Salle Tribune.*

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*My Dear Doctor:*

I have seen your name in Amick's pamphlet. Please give me the outcome of your experience with the so-called "chemical treatment" for consumption. The enterprising managers have within the last month made Chattanooga a sort of head-center for sending out in the secular press wonderful cures which are pure fabrications. Not a particle of proof can be furnished that a case of tubercular consumption has been cured, or benefited by the so-called treatment. Has Cincinnati sold out and moved to Chattanooga? Verily, it seems so. Speak your mind fully to me.

Sincerely yours, JAMES E. REEVES.

Dr. Reeves is full of fight, and says he will expose the whole thing in court next October with great pleasure.

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**The Protestant Hospital** Association of Duluth, Minn., capital $50,000 has been incorporated.

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### LETTERS RECEIVED.

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The Journal of the

American Medical Association

VOL. XXI. CHICAGO, SEPTEMBER 16, 1893. No. 12.

## ORIGINAL ARTICLES.

### REPEATED EXTRA-UTERINE PREGNANCY WITH THE REPORT OF A CASE.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY GEORGE I. McKELWAY, M.D.
PHILADELPHIA.

On the 14th of February, 1891, Mrs. M., the wife of a lawyer, consulted me, giving me the following history:

She was 30 years old, had been married the previous September, had been perfectly well and had believed herself two months pregnant, when, on the 25th of January, 1891, while staying at Atlantic City, she had a profuse hemorrhage from her uterus. A physician was called who, from her statement of probable pregnancy and hemorrhage alone, diagnosticated an abortion. The patient did not remember having passed any mass, or having at that time had any severe pain or colic.

This physician saw her only once more in the ten days that followed. On the tenth day she sat up and for one week thereafter the hemorrhage continued. She said that the physician made no examination at any time and gave her no treatment except to order her to keep her bed for ten days. When she called on me she was still losing some blood, not amounting to hemorrhage and as her trunks were packed to return to Philadelphia, where she expected to come within three days, I made no examination supposing the condition simply an incomplete abortion, but told her to complete her preparations for her return home, where I would see her and treat her as the case required. I expected to empty the uterus.

She returned to Atlantic City. Two days later, while still absent, she was suddenly seized with the most intense pain in the lower abdomen, fell to the floor and fainted. Dr. E. A. Reiley, living near by, (who had not seen her before) was sent for and had charge of her until the third of May, when she was able to be moved in a rolling chair to the train, was brought to Philadelphia, and came under my care. Dr. Reiley courteously furnishes the following history:

> "Your letter asking for information concerning the case of Mrs. M. is at hand. I am away from home and can not give dates with accuracy, not having access to my books, notes, etc.
>
> "Some time in February of 1891, I first saw the patient at Atlantic City. I was called hurriedly, and on arriving at the house, found her on the floor where she had suddenly fallen while exerting herself in arranging to move to her home in Philadelphia. She was lying on her back, with the knees drawn up, and complained of intense pain in the lower part of the abdomen.
>
> "The lips and face generally were white; ashy and drawn, the nose presenting a pinched appearance and the whole look of the woman was as that of one dying. She was bathed in a cold perspiration and had no radial pulse, but was perfectly conscious and the pain seemed to be agonizing. As soon as possible after starting the use of the proper remedies, I attempted to make a vaginal examination, principally with the idea of finding signs of a miscarriage; or of a pregnancy. The os was closed and small, hard and resisting as in health, and there were no signs of hemorrhage flowing externally. On account of the great pain it occasioned I did not persist further in the examination at that time. In about an hour the radial pulse became perceptible. She was removed to a bed and in a few hours was apparently out of immediate danger. The pain persisted with diminished intensity for a week or ten days, and it was fully that time before a satisfactory examination could be made as I did not deem it necessary to use ether. During this time there was a slight yellowish discharge per vaginam. Upon examination I found a slightly fluctuating mass on the right side of, and in front of the fundus of the uterus. I should judge it to have been about the size of a small orange. From that time on it decreased in size and Mrs. M., though subject to some pain and soreness at times, made a continuous, though slow recovery.
>
> "On the 14th of March I was taken ill myself and Dr. Kaemerrer took charge of the case for me but its slow progress was, I believe, without incident. I think she said at the time of the accident that she had not menstruated for two periods, but my memory is not clear as to what she told me about the time.
>
> "I am sure the effusion was on the right side, although at this distance of time, with a long and severe illness of my own between, my 'quite sure' may possibly be wrong; but I think not as my memory of events connected with the case which came under my personal observation is very clear. I think I have stated everything that can bear on the case."

On her return I made a careful examination and found just the condition that Dr. Reiley described. The uterus was normal in size and position and quite freely movable. There was no uterine hemorrhage and the right side presented a mass, at this time about as large as a lemon. This, from the history, was evidently being absorbed, and she seemed perfectly well, excepting anemia, so I did nothing more than to advise against over-exertion, give iron, etc., and look after her general health. In July there was no longer any tumor to be found. She was then seemingly in perfect health and I did not see her for five months.

On the 3d of December, 1891, I received an urgent call to see her as she had suddenly been taken violently ill. I saw her at 5 P.M. I found her in bed propped up by pillows, face pinched and drawn, body wet with cold perspiration, and absolutely blanched by what proved to be an internal hemorrhage, radial pulse imperceptible, heart beating 168 times in a minute, respiration sighing; semi-conscious, and suffering excruciating pain in the lower part of her abdomen. The story was that her last menstruation had occurred seven weeks before and that she had supposed herself pregnant. The night before at 3 A.M. she had been wakened from sleep by violent pain. She cried out, awaking her husband; immediately lost consciousness and became very much blanched. Her husband called in the nearest physician, (a homeopath) who diagnosticated a retroversion of the uterus as the cause of her condition. Assisted by her hus-

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band he put the nearly dead woman in the knee-chest posture, stuffed her vagina full of cotton, and left her with the assurance that she would soon be better. She did not improve under this treatment and he was called again in an hour, removed the cotton and gave her a hypodermic injection of half a grain of morphine. These hypodermics were repeated at intervals until, when informed that I was coming, he left word that he had given her five of a half grain each.

I found the vagina bulging forward, the uterus pushed up against the pubic bone and somewhat enlarged, but presenting no evidence of hemorrhage. Her abdomen was very much distended and dull in both flanks. The head was lowered, the foot of the bed raised and hot water bottles placed about her. Hypodermic injections of digitalis and whisky, and rectal enemata of milk and whisky were given. A ruptured tubal pregnancy with very great hemorrhage was suspected and her husband informed that her only hope was through the prompt performance of an operation, to which he consented. Dr. William Goodell was asked to see her with me and assist in an operation if he deemed one advisable. On our return we found the patient almost unconscious. Dr. Goodell quickly examined her, agreed with me in my diagnosis and with very little preparation the operation was begun. Dr. Goodell kindly etherized her, but during the operation the ether was turned over to a nurse.

Her condition was so desperate that time was an showed an axillary temperature of 96 degrees, but respirations were deeper and the pulse beat 146.

I remained all night and kept hot water bottles continuously about her, administered enemata of milk and whisky, and hypodermic injections of digitalis, whisky and strychnin, with I believe, one of atropin. For a few days the foot of the bed was kept elevated and she was denied a pillow. Rectal enemata of animal broths, beef juice, etc., with stimulants, were continued for three days. They were absorbed apparently without difficulty, due, I believe, to their frequent administration in small quantities. Thereafter she was fed as she could take food and the enemata were discontinued. She made an uneventful recovery and is now entirely well.

No products of conception were found, nor were they carefully looked for, as owing to the scarcity of vessels, the blood clots were emptied into the bath-room water closet close by as frequently as the vessels containing them were filled. The condition of the patient seemed so desperate and hopeless that there was neither time nor inclination for such a search.

The history undoubtedly indicates that she suffered a tubal pregnancy with rupture on the right side at Atlantic City in February, 1891, and in December, 1891, the left tube was ruptured because of a pregnancy in it. Each time she had symptoms of pregnancy—suppression of menstruation, morning nausea, prickling breasts, with symptoms and sequelæ of rupture. It is to be regretted that the tion for a ruptured tube on one side, and have subsequently borne children without complication, is no argument in favor of such a procedure. It is fair to say that they have escaped a repetition of the calamity, *despite the fact* that all the elements for its occurrence were permitted to remain. The well-known case of Lawson Tait, quoted later, shows the danger of such a procedure, and the possibility that a normal pregnancy following an extra-uterine fetation is fairly to be considered more as an accidental occurrence than is a future pregnancy in the other tube and its possible fatal consequences.

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Hermann also reports, in the *British Medical Journal*, band he put the nearly dead woman in the knee-chest posture, stuffed her vagina full of cotton, and left her with the assurance that she would soon be better. She did not improve under this treatment and he was called again in an hour, removed the cotton and gave her a hypodermic injection of half a grain of morphine. These hypodermics were repeated at intervals until, when informed that I was coming, he left word that he had given her five of a half grain each.

I found the vagina bulging forward, the uterus pushed up against the pubic bone and somewhat enlarged, but presenting no evidence of hemorrhage. Her abdomen was very much distended and dull in both flanks. The head was lowered, the foot of the bed raised and hot water bottles placed about her. Hypodermic injections of digitalis and whisky, and rectal enemata of milk and whisky were given. A ruptured tubal pregnancy with very great hemorrhage was suspected and her husband informed that her only hope was through the prompt performance of an operation, to which he consented. Dr. William Goodell was asked to see her with me and assist in an operation if he deemed one advisable. On our return we found the patient almost unconscious. Dr. Goodell quickly examined her, agreed with me in my diagnosis and with very little preparation the operation was begun. Dr. Goodell kindly etherized her, but during the operation the ether was turned over to a nurse.

Her condition was so desperate that time was an element of the greatest importance and we were obliged to do some things which under other conditions would not have been done. Although instructions had been left on my first visit to provide an abundance of hot water, this, in their panic, had been neglected and we were obliged to use water from the spigots in the bathroom for our instruments and for irrigation. The cleansing of the abdomen also was very hurriedly and imperfectly done.

The abdomen was opened in the median line. There was no blood from the incision and the tissues were perfectly blanched, On nicking the peritoneum black blood spouted up through the opening. From the history of her former attack I believed the cause for trouble would be found on the left side. I passed two fingers through masses of clotted blood, and brought out, ligated and incised, the ovary and ruptured tube. The tube was enlarged to the size of a large lead pencil and ruptured in the middle third. The other ovary and tube were found adherent to the fundus of the uterus, and, whereas the ovary on the left side, on which this last rupture had occurred, was apparently healthy, this ovary and tube were disorganized; the ovary was enlarged and as soft as cheese, so that it was removed in fragments from its adhesions. After its removal the abdomen was freed from clots and fluid blood. A pint vegetable dish, the only receptacle at hand, was filled four times, and in addition a pint of fluid blood was removed by sponges. Her abdominal cavity was then irrigated with several pitcherfuls of water. (The water from the hot water spigot was too hot and had to be cooled from the cold water spigot.) The abdominal and peritoneal incision was closed without drainage and the patient removed to bed. Her condition was better than before the operation, though the radial pulse was still imperceptible and the thermometer showed an axillary temperature of 96 degrees, but respirations were deeper and the pulse beat 140.

I remained all night and kept hot water bottles continuously about her, administered enemata of milk and whisky, and hypodermic injections of digitalis, whisky and strychnin, with I believe, one of atropin. For a few days the foot of the bed was kept elevated and she was denied a pillow. Rectal enemata of animal broths, beef juice, etc., with stimulants, were continued for three days. They were absorbed apparently without difficulty, due, I believe, to their frequent administration in small quantities. Thereafter she was fed as she could take food and the enemata were discontinued. She made an uneventful recovery and is now entirely well.

No products of conception were found, nor were they carefully looked for, as owing to the scarcity of vessels, the blood clots were emptied into the bathroom water closet close by as frequently as the vessels containing them were filled. The condition of the patient seemed so desperate and hopeless that there was neither time nor inclination for such a search.

The history undoubtedly indicates that she suffered a tubal pregnancy with rupture on the right side at Atlantic City in February, 1891, and in December, 1891, the left tube was ruptured because of a pregnancy in it. Each time she had symptoms of pregnancy—suppression of menstruation, morning nausea, prickling breasts, with symptoms and sequelæ of rupture. It is to be regretted that the fetus was not found and that the specimens were not examined microscopically.

Despite much speculation, the causes that lead to tubal pregnancy are not definitely or positively known. That *severe* salpingitis is not one, is evidenced by the fact that it leads to occlusion of the tube. Whether mild salpingitis, noticed upon microscopic examination of specimens from cases of tubal pregnancy is cause or consequence, remains undetermined. It seems fair to suppose—but it is only a supposition—that whatever the primary cause, the immediate causes of tubal pregnancy are an abnormal patency of the proximate end of the tube, or a stenosis of it elsewhere; with possibly a destruction of or loss of effective function of the ciliated epithelium lining it.

In view of this and other cases, which I shall subsequently recite, the question arises whether the existence of tubal pregnancy upon one side is an indication that the individual is prone to its occurrence upon the other, and whether this liability is so great, supposing operation necessary for an impregnated or ruptured tube, as to require the removal of the apparently sound tube and ovary.

My study of this and other cases leads me to the conclusion that both tubes and ovaries should invariably be removed in every case of ectopic gestation. The conditions which affect one cornu of the uterus, or one tube, are equally liable to affect the other. From the usual position of the uterus, with one cornu lower than the other, the most dependent tube may, from retention of decomposed discharges, be more prone to this accident; but any theory of immunity in one tube based upon a trifling difference of position will not justify leaving in the woman's pelvis that which may be an occasion of sudden and irremedial calamity to her.

The mere fact that women have suffered operation for a ruptured tube on one side, and have subsequently borne children without complication, is no argument in favor of such a procedure. It is fair to say that they have escaped a repetition of the calamity, *despite the fact* that all the elements for its occurrence were permitted to remain. The well-known case of Lawson Tait, quoted later, shows the danger of such a procedure, and the possibility that a normal pregnancy following an extra-uterine fetation is fairly to be considered more as an accidental occurrence than is a future pregnancy in the other tube and its possible fatal consequences.

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Hermann also reports, in the *British Medical Journal*, September 27, 1890: "A case in which second Tubal Pregnancy in one Patient was Diagnosed and Removed before Rupture," as follows:

"In January, 1887, right tube removed for a ruptured tubal pregnancy of that side. May 13, 1890, an unruptured tube containing a fetus was removed from the left side. He says in reference to this case, and probably with the thought of the case previously quoted in his mind: "Tubal pregnancy is so often bi-lateral that I think it probable that similar cases may hereafter be found to be commoner than appears to be at present supposed."

In the *British Medical Journal*, 1892, Vol. 2, p. 732, there is reported a case upon which Galabin operated and the specimen from which Bland Sutton examined. It was reported under the title: "A Case of Tubal Gestation in which both Tubes were Gravid—Operation and Recovery." Upon examination of the specimens Sutton writes: "In this case we have to do with pregnancy in each tube, but the pregnancy in the left tube is much more advanced than that in the right tube;" and, after quoting three other cases in which he believed that concurrent pregnancy in each tube existed, but in which the proof was not absolute, he again states: "In this case the existence of impregnated ovum in each tube is beyond all doubt."

Mackenrodt, in the *Zeitsch. fur G. and G.* (Band 23, heft 1) reports a case as follows: "In May, the patient had symptoms of tubal pregnancy and of rupture of the sac, but refused operation. In October, 1891, she again had same symptoms and operation revealed a left-sided gestation sac the size of a goose egg, and on the right side a sac, bound in by adhesions and inherent intestines, containing fetal bones."

Olshausen, (*Deutsch. Med. Woch.*, 1890, No. 9, p. 174) reports that on Nov. 1, 1888, he removed a living fetus from the right tube. One year later patient came again with all the symptoms of a ruptured tubal pregnancy. He now removed the left tube in which was decidual tissue.

Dr. Theodore Mayer of Copenhagen, is reported in the *Annals of Gynecology*, 1890, Vol. 3, p. 501, as having removed the tube and ovary of a ruptured tubal pregnancy from the left side on January 19, 1888. On September 6 the patient had a hemorrhage and fainted, and a soft mass was found on the right side the size of a large walnut. Two days after, patient fainted again and was in a collapsed condition for some time. On October 25 she had a hemorrhage of dark blood from her uterus, pain in the abdomen, vomiting, etc. On October 29 she "passed a membrane which had all the characteristics of a true decidual pregnancy." On November 13 "a big, soft swelling" was found to the right of and behind the uterus which grew harder and harder, and gradually disappeared.

In the *British Medical Journal* of June, 1892, Thomas Savage reports a case in which upon operation he found the right tube ruptured in the center and "an apoplectiform mole" escaped; on the left side, a tumor—"a black clot as large as the closed fists" was found adherent to omentum and intestines. The ampulla on that side was found dilated.

Boisleau (*Arch. d' Obstet. et Gyn.*, May, 1892) gives the history of a case in which seven weeks after operation for ruptured tubal pregnancy, of which no particulars are given, operation for the same condition was again demanded. He states that microscopic examination of the specimens from both sides prove both to be tubal pregnancies.

Kletzsch, in the *American Journal of Obstetrics* of May, 1888, p. 520, details the case of a woman from whom Dr. Thomas removed an extra-uterine pregnancy (side not stated) in June, 1884, and who, in October, 1887, after cessation of previously regular menstruation for two months, had then and thereafter all the symptoms of ruptured tubal pregnancy; but who slowly recovered without operation. He states that Dr. H. C. Coe concurred in the diagnosis.

Albert Peuch (*Gaz. Obstet.*, Paris, 1879) reports two cases as follows:

*Case 1.*—A woman aged 30, having had seven labors, the last resulting in twins, became pregnant for the eighth time. At term she became ill and the movements of the fetus ceased. On recovery her menses were re-established and she finally became pregnant for the ninth time. The ninth pregnancy progressed to the eighth month when she developed an abscess in the abdominal wall, and was at the point of perishing. The abscess opened and a piece of bone was discharged. She applied to a surgeon for relief. He introduced a stylet into the cavity of the abscess and enlarged the opening with knife and forceps, removing a fetus, bone by bone. A tumor, referred to the left side, which was the product of her last pregnancy, was allowed to remain, owing to her feebleness during operation. Subsequently gastrotomy was performed and the product of her remaining pregnancy was removed, member by member. Contrary to all hope the patient recovered.

*Case 2.*—A domestic. Died twenty-four hours after a rupture of a tubal pregnancy, apparently four or five months advanced. At the autopsy all the organs were found normal except the uterus and its adnexæ. The uterus measured four inches in length. The right ovary and tube were distended into a sac having a globular form and a diameter of three and a half inches. It contained a fetus at about the third month. Upon the side of the sac was a solid, irregular tumor the size of a nut, hanging by its membranous adhesion, like a polyp. Upon examination it was found to contain an embryo enveloped in the membranes proper. Six months before her death she had had intercourse a number of times with the man who had impregnated her the last time.

Bröse (*Zeitschrift fur Geburtshilfe and Gynakologie*, 17, '89, p. 335) demonstrated a tubal pregnancy on the left side with hemato-salpynx of the right tube, which he had removed by laparotomy. Patient was a 2-para. Three months after the cessation of her menses the decidua came away, preceded by hemorrhage on the day before. At the laparotomy a right-sided hemato-salpynx was found with brown fluid blood in the peritoneal cavity. The left-sided tubal pregnancy was not ruptured.

Veit (*Zeitschrift fur Geburtshilfe and Gynakologie*, Vol. 17, p. 335) exhibited a tube filled with blood coagula which he found by microscopical examination to have been the result of pregnancy. The tube he had removed by laparotomy from a patient upon whom he operated for a similar condition on the other side. He reported also two other cases in which he had operated and removed tubal pregnancies, and in each of which all the symptoms had returned at a later period, but the patients recovered without operation. Questioned as to the possibility of making a diagnosis, Veit replied that the menses were absent, the patients came under observation suffering severe pain; after entrance to the hospital they had slight hemorrhage, in which no parts of the ovum could be recognized. There was a hard tumor of the tube from which the pain radiated.

Von Heukelon (*Centralblatt fur Gynakologie*, No. 3,

1887) refers to a case, described by Dr. Nijkampin (*Nederl. Tijdschr. V. Geneeskunde*, 1885), dying of internal hemorrhage from the rupture of a tubal pregnancy. On autopsy the uterus was found reaching to the upper level of the symphysis, with thickened walls of soft consistency. The right tube about four centimeters from the uterus, has been distended, forming a cyst about the size of a walnut, which had ruptured. In Douglas' pouch was found a large mass of soft fresh coagula containing an embryo, upon which the eyes and ears could be recognized. Upon the left tube about four centimeters from the uterus was a fissure two centimeters long. At this position were found a number of flakes of connective tissue and membranes resembling torn tissue. Upon the posterior surface of the ligamentum latum were seen a number of flakes of circumscribed yellowish brown coagula lying in little pockets. The left ovary contained the remainder of an old corpus luteum. The right ovary showed on section a corpus luteum the size of an almond. He believed that very probably three or four months previously conception had taken place and the ovula had found attachment in the left tube, developed and, six or eight weeks before the woman's death, the sac had burst, giving rise to a small hemorrhage which had soon become encapsulated. This was explained by the yellowish brown coagula and the fissure in the left tube. Soon after, an impregnated ovule had become attached in the right tube, developed and ruptured; causing the woman's death.

Lopes (*Revista de Medicina y. Cirrugia Practica*, 1880) refers to a case described by Silva. The woman died suddenly with signs of an acute inflammation. On autopsy a tumor was found containing five liters of sero-sanguineous fluid, which was demonstrated to contain the products of conception. The placenta was situated in the right iliac fossa. In the superior part of the epigastrium another sac was found from which a female fetus was removed.

Dr. John W. Taylor, in the *British Gynecological Journal*, August, 1892, p. 168, reports a case as follows. He says:

"On December 22, 1889, after nearly six months' amenorrhœa, during which she believed pregnancy had begun, the patient was attacked with symptoms of peritonitis. Coincident with this, a tumor—evidently a hematocele—developed on the left side of the uterus. I diagnosticated the condition as probably due to the rupture of a tubal pregnancy, but the hemorrhage was *not* severe and was evidently circumscribed by local inflammatory action. In twelve hours all the more acute symptoms had subsided. When I next saw the patient a well developed hematocele of considerable size remained in the pelvis The patient was kept in bed six weeks, by which time the hematocele had become absorbed and the parts, on examination, had returned to a fairly normal standard."

Two years after, Dr. Taylor operated on this same patient for a ruptured tubal pregnancy and removed, from an abdomen full of blood, the left tube and gestation sac. He found a recent rupture (he doesn't say exactly where) in the tube, but states that near the end of the tube there was an old rupture which he believes to have been occasioned by the previous attack. He states that the other ovary and tube were apparently healthy and normal and he left them in. This case is an exceedingly rare one as his belief is that this woman suffered two ruptured tubal pregnancies in the same tube. In the fact that the same tube was involved each time it differs from the other cases I have quoted.

Frommel, in *Medic. Woch.*, 1890, No. 23, p. 494, describes a case as follows:

"In 1883 he operated upon a woman, 33 years old, eight days after, the rupture of a tubal pregnancy and extracted the fetus, etc. This pregnancy was in the right tube. Four years after, in May, 1887, the patient's menses ceased for eight weeks; she was suddenly seized with pain in her abdomen on the left side, with vomiting; she fell in the street, became suddenly pale and no pulse was to be found The next day she expelled membranes which a microscopic examination showed to be decidual.

"On vaginal examination, a tumor, elastic, filling the pelvis and pushing the uterus forward and upward, was found. The patient recovered from this acute attack, and four weeks after again had all the symptoms of internal hemorrhage. The tumor increased in size and there remained thereafter a hematocele. This slowly diminished and the patient made a slow recovery."

Dr. W. A. N. Dorland of this city has kindly furnished me particulars of the following case, which was operated on successively by Dr. B. F. Baer and Dr. Dorland:

"On the 11th of October, 1890, E. L. called at the dispensary of the Polyclinic hospital. She was then 28 years old, had had four children—the eldest six years and the youngest fifteen months old. She said that she had missed her menses for three weeks and believed herself pregnant, but that after two weeks her menses came on. although not so freely as formerly and the discharge was much lighter in color. When menses returned they were associated with cramp-like pains—"a bearing down not unlike labor pains." She was having repeated rigors followed by fever; was anemic and very much prostrated and the abdomen was quite enlarged. The cervix was found on the floor of the pelvis, the os was patulous, and the body of the uterus was enlarged to the size of the second month of gestation. To the left was found a circumscribed mass, apparently attached to the uterus, fluctuating, about the size of an orange, and tender on pressure. Operation was done by Prof. Baer on the 20th of October, 1890 and a ruptured tube of that side with fetus in situ, blood clot, etc., found and removed. She made a good recovery.

"On the 19th of July, 1892, the patient returned saying that she had the same symptoms as before, excepting that this time the right side seemed involved, and she thought she was pregnant again in the same way. Examination showed a slight increase in the size of the uterus and a small tender mass on the right side. Dr. Dorland says: On August 10 I was sent for at 1:30 A. M. Found her pale and anxious. She had had a severe attack of pain on the night of the 6th of August; on the 7th. a discharge of blood from the womb; on the 8th five fainting spells. Examination showed womb considerably enlarged and tumor to the right much increased in size and perceivable through abdominal wall; a boggy mass in Douglas' pouch; operation same day; tubal pregnancy, fetus in situ in tube, abdominal cavity full of blood, good recovery."

Since this paper was practically finished Carl Beck of New York, records in the *American Journal of Obstetrics* for April, 1893, under the title "Ectopic Pregnancy twice in the same Patient" a case as follows:

"Dr. C. A. L. Reed of Cincinnati, had operated upon the patient on the 20th of March, 1891, and in a letter to Dr. Beck states that, 'I was called to see Mrs. M., by Dr. J. A. Johnson, who informed me that she presented the evidences of ectopic pregnancy. I made a section and found the abdomen full of blood. We took out a large number of laminated sacs from the cul-de-sac and removed the appendages from that side. There was a rent in the tube There was nothing in particular about the operation beyond that which is peculiar to ectopic pregnancy. I did not find the fetus for the evident reason that the rupture had obviously occurred some time before and the fetus had disappeared by maceration.

"The woman was so thoroughly exsanguinated by the operation and by the loss of blood—for I had operated on the heels of a recent hemorrhage—that I made no search whatever for the appendage on the other side, which I believe ought always to be removed when practicable, and when not contra indicated by an exsanguineous condition of patient whenever an operation is done for an

This woman came under the care of Dr. Beck on the 23d of August, 1892. She had missed two periods and believed herself again pregnant. On that morning she had a sharp pain in her abdomen, and felt that she was going to miscarry. Her symptoms, which it is not necessary here to relate, led Dr. Beck to operate three days later.

He says: "A large tumor of fleshy appearance presented itself embedded in adhesions from all sides. It seemed to be the pregnant uterus, though the walls were very thin at the apex and fluctuating so markedly that I was not sure whether it was not the cyst of an extra-uterine pregnancy.

"On the right side a short tube about one-half of the normal length was seen ending suddenly in the large tumor. The ovary was normal. He incised the tumor and extracted the fetus and membranes of a pregnancy of over three months.

"When the fetus was removed the walls were easily seen to be hypertrophic and muscular, contracting and getting thicker, and by introducing my finger into the cavity I could distinctly feel the difference between the uterus and tube. The placental portion of the membranes had been attached to the tubal portions. An extirpation of the sac was, on account of the indistinct termination of the same, not possible without extirpation of the entire uterus. I therefore closed the incision by deep and peritoneal stitches."

In the discussion which followed Dr. Beck's paper (it was read before the Gynecological Society of Chicago) Dr. Fred Byron Robinson said that he believed that Dr. Beck's case "is a case of pregnancy in the horn of the uterus and not in the tube," and in this judgment I concur, although I have thought it wise to quote the case among those collected by me.

I am aware that not all of these cases are entirely proven. Yet observers, probably as capable of making a diagnosis as are those who will criticise them, and with the advantage of personally seeing the patients and the specimens, believed them to be cases of repeated extra-uterine fetation. But if even a very few cases were proven, the fact and the expectation and probability of like morbid or abnormal conditions prevailing in each of two symmetrical and identical organs excites the careful consideration of the initial question of this paper.

Now, if, in addition, we remember that Lawson Tait, Bland Sutton and others claim and apparently prove that many cases heretofore called "hematoma of the broad ligament" and "pelvic hematocele" are really ruptured tubal pregnancies, differing only in that rupture has occurred into different structures, and, further, that most cases of hemato-salpynx are the same conditions unruptured; and that a very large number of cases have been reported, in which, upon operation or autopsy after tubal pregnancy of one side, one of these conditions was found existing on the other side, we will see how frequent repeated tubal pregnancies are, and the facts will, I believe, justify me in the position I take and which I again state, that, in all cases in which, upon operation, a tubal pregnancy is found, the ovaries and tubes of both sides should invariably be removed.

Dr. H. J. Boldt of New York City, related a case to impress the view which he held in opposition to the essayist, that where the opposite tube and ovary were healthy, they should be allowed to remain. Where, however, they were diseased, they should be removed in the class of cases under discussion, just as during an operation for pyosalpynx or other condition.

Dr. Joseph Eastman of Indianapolis, objected to operating on healthy appendages, because on one side there might be tubal pregnancy, and the danger of having to submit to a second operation was more than offset by the enhanced danger of the double procedure at the same sitting.

Dr. Howard A. Kelly of Baltimore, thought especial attention should be given the pathological condition. The studies of his assistant pointed to crypts or diverticula in the mucous membrane of the tubes, sometimes observable under the microscope, as the cause of tubal pregnancy, the ovum becoming lodged in one and unable to pass to the uterus. But we could not say that this condition existed, making tubal pregnancy probable in a tube which appeared to be normal, simply because tubal pregnancy had occurred on the other side.

Dr. Horace T. Hanks of New York City; Dr. C. R. Reed, of Middleport, Ohio; Dr. Charles P. Noble of Philadelphia; Dr. J. Henry Carstens of Detroit, and Dr. A. McLaren of St. Paul, favored removal of the appendages on the opposite side when they were diseased, but objected to the procedure when there were no indications of disease.

Dr. O. B. Will of Peoria, Illinois, had for several years been investigating the matter of catheterization of the Fallopian tubes, and had been able to demonstrate its possibility in a number of instances. He reported two cases in which the tubes were easily dilated, which he thought had a possible bearing on the etiology of extra-uterine or tubal pregnancy.

Dr. McKelway, in closing, said the danger of removing a perfectly healthy tube and ovary, when an operation is being done for a ruptured tubal pregnancy had been exaggerated. It was not a difficult thing usually to remove a tube and ovary that were perfectly healthy.

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# EXTRA-UTERINE PREGNANCY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

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A few years ago the report of a case of extra-uterine pregnancy was a rare event. They are frequent at this time; in fact, one can scarcely glance over a medical journal without seeing one or more cases reported. These cases are being recognized and reported with such frequency that one feels like apologizing to the members of a national organization for offering an addition to the list. However, it has been through the rehashing (so to speak) of this topic that this familiarity of the subject has been attained and the tabulation of these good results made possible. I shall dwell upon the pathology of ectopic gestation only so far as is necessary to sustain the position I hold, relative to the mooted location of the fœtus in some instances, i. e. intra-ligamentous.

While my experience in extra-uterine pregnancy has not been an extensive one, it has been characterized by a multiplicity in number considering the length of time since I saw my first case.

In two years in my own practice and, in that of others in which I assisted at the operation, I have had an experience of sixteen cases. The duration of pregnancy has extended over as wide a range as the location of the fetus has in variety; from six months to two years—from a soft gelatinous embryo to a well formed nine pound child; from a cob-nut size embryo in the tube to a full grown child in the broad ligament. It is only in the tube ectopic gestation takes place and all other varieties are only made so by rupture of the tube as the fetus develops. Tubal abortion (?) being the exception, this may be excluded from the list with safety.

It is evident that all cases of tubal pregnancy rupture at some period, unless the growth of the fetus is stopped by some means, but the methods advocated to check the growth of the embryo are so uncertain in their results, so unsurgical and so dangerous to the mother, and the diagnosis so doubtful prior to rupture, that they are to be practically excluded from the management of these cases.

Intra-peritoneal is to extra-peritoneal rupture in the proportion of three to one. When rupture takes place between the layers of the broad ligament, the hemorrhage is limited by the resistance offered by the surrounding structures, death rarely occurring to the patient from this first rupture. The fetus may in this situation ("and in fact it is the only one in which it does," Tait) survive the accident and either continue to grow to the full period of gestation, or rupture secondarily into the peritoneal cavity, and cause speedy death of the mother from hemorrhage. Jesop's and Hoffman's cases of abdominal pregnancy were cases where the mother survived even this secondary rupture. The fetus dies, as a rule, after the primary rupture or at a later period before the ninth month, giving rise to suppuration in the leaflets of the broad ligament, leading to pelvic abscess, which may at any time burst into the peritoneal cavity, producing a rapid septic peritonitis and death, or it may open externally, by one or more fistulous tracts through the vagina, rectum, bladder or intestines. With rare exceptions the dead embryo becomes encysted and remains for years, placing the life of the woman in constant jeopardy. Cases terminating by suppuration are within the range of surgical interference.

When rupture of the tube has occurred it does not necessarily follow that all maternal and fetal structures be entirely and instantly separated and the embryo dislodged. This process when the rupture takes place into the ligament is as a rule a gradual one; some of the chorionis will remain attached to the tubal mucous membrane until the embryonical structures have established an independent existence, the child then continuing to grow; if this process of expulsion is a rapid one, then the fetus dies and an apoplectic ovum is the result, the hemorrhage is small and imprisoned or the bleeding may be profuse, killing the woman in a few hours. In the apoplectic as in the uterine abortion the hemorrhage is liable to occur at any time as long as the ovum is not removed. There is an authentic report (Tait) of a primary peritoneal pregnancy. The cases reported as such, where the child became viable. I believe were originally tubal, then intra-ligamentous, secondary rupture taking place converting it into an abdominal. In these cases the placenta will be found to occupy a position below the fetus usually in the bottom of the pelvis. When the tube ruptures into the peritoneal cavity the hemorrhage is always of the most profuse character, killing in many cases within a few hours after rupture, unless saved by timely and good surgery. In rare instances where rupture takes place and even where there has been profound shock from the traumatism and loss of blood, the patient may rally and recover entirely. The peritoneum has wonderful resisting powers to septic invasion, if the poisonous material is against its outer surface. This membrane can be dilated and stretched considerably if only that process be a gradual stretching. This is exactly what takes place during the slow growth of an intra-ligamentous pregnancy, where the protrusion of the embryo from the opening, at the site of the tubal rupture, has not been an abrupt process attended by a large hemorrhage. In intra-peritoneal rupture the first bleeding may not prove fatal, after giving rise to the most alarming symptoms; at any moment the hemorrhage may recur and kill the woman before the surgeon arrives.

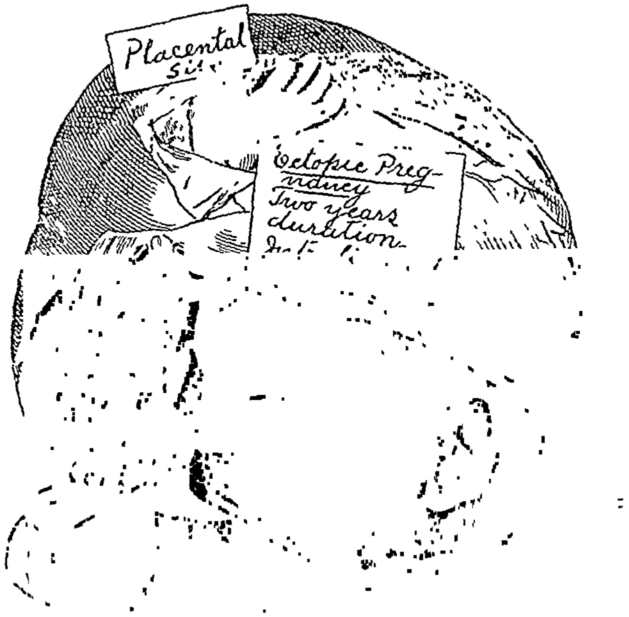
A hemorrhage occurring in the peritoneal cavity differs from a bleeding occurring in any other part of the body; owing to the presence of more or less lymph in air-tight cavity the blood does not coagulate quickly and the clots that are formed are soft and friable and not of that character to firmly occlude the open mouths of the ruptured blood vessels and thereby permanently control the bleeding. They are easily washed away by the blood current with the increased force of the heart's action after the subject has temporarily rallied from the immediate depressing effects of the first hemorrhage. The treatment of this intra-peritoneal rupture may be summed in a few words: stop the bleeding promptly, remove the ruptured tube, wash out the cavity with hot sterilized water, and drain. The restorative agents and tonics should constitute the after treatment of these cases.

The diagnosis of ectopic pregnancy prior to rupture is attended with great difficulty and is rarely made; the symptoms are such after this accident has occurred that one can form an opinion warranting an exploratory incision down to the peritoneum. I say to the peritoneum, because if you are in doubt as to whether a *serious* hemorrhage has occurred or is going on, when you reach this serous membrane the correctness or error of your diagnosis is at once established and the proper course for you to pursue in the investigation or management of the case is at once mapped out. If this membrane is darkened or almost black and bulges through the incision you may at once know that a hemorrhage has taken place or is going on, or that there is some abnormal condition giving rise to the presence of a dark fluid, and the justifiability of carrying the investigation farther will be at once settled beyond a doubt. In many of these cases there is a history of some menstrual irregularity or deviation from the accustomed course in the case under investigation. such as the missing of one or two periods or an irregular intermenstrual period or flow occurring in a woman previously regular, culminating in an attack of acute suffering in the region of either uterine appendage accompanied by shock and symptoms of loss of blood.

*Ectopic Gestation. Case.*—Intra-ligamentous. Full-grown child retained nearly two years. Operation by Drs. Griffith and Cordier. Recovery.

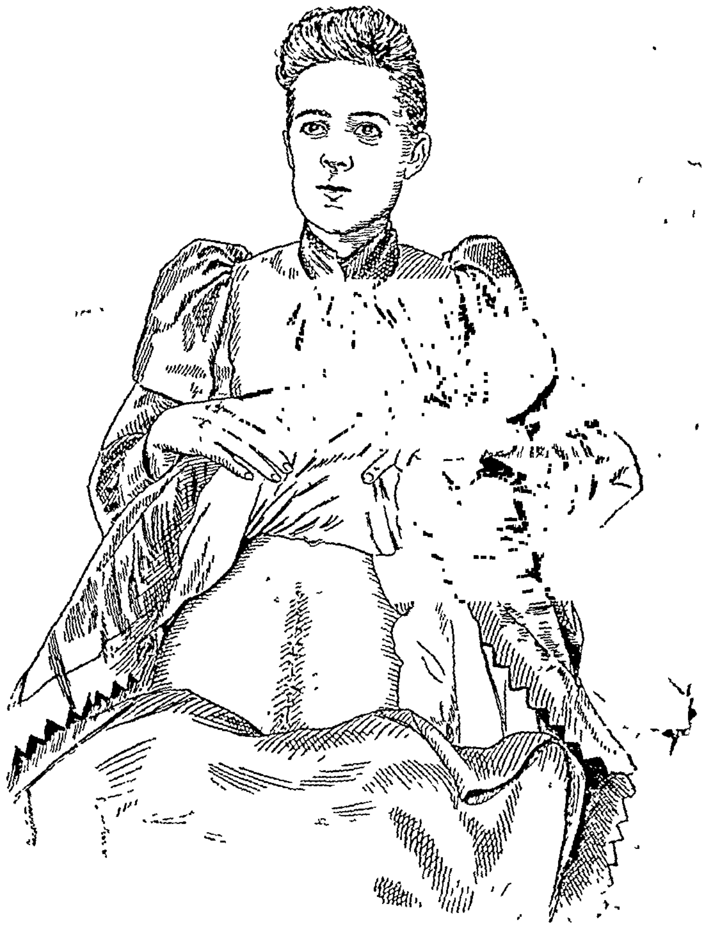
Mrs. S., age 24. April 20, 1893, date of operation. April 15 I saw this lady for the first time. Says she has never given birth to a living child or had a miscarriage. Previous health good. In August, 1891, she missed a period, having been regular prior to that time. In October no appearance of menses but in November flowed for three weeks, during which time she had pains in region of uterus of a paroxysmal character. Later in November she had "fainting spells" and was semi-conscious for a few hours, but warm applications and brandy revived her. Never had any sickness at stomach. Breast became enlarged in December, 1891, with a darkening of the areolæ followed later by a secondary dark ring. Decidual shreds passed in November, 1891. She felt fetal movements in December, 1891, which continued up to April, 1892, or nine months after the date of conception. During March and April she had false labor pains with a steady flow of a watery looking fluid, with occasional small gushes; during this time she diminished some in size. Says enlargement was more on her left side in the beginning but soon became central. She did not have a regular menstrual period from August, 1891, to December, 1892. From November 1891 to April 1892 she had at times a "rusty discharge." She menstruated in December 1892 and was regular up to March 16, 1893. Since then (this is June 1) she has not seen her flow and the indications are that she is now pregnant. The pregnancy antedating the period of operation by four weeks.

This lady's mother consulted me in June 1892 relative to her daughter, stating that she had a "tumor of fifteen months' duration" and that she desired me to see the case. A few weeks later I asked the mother why the daughter had not been to see me; she stated that a physician had told the daughter that her "tumor" was a pregnant uterus. Said they were delighted to know that they were mistaken about its being a tumor. From this time the case dropped out of my sight, but I thought of the case often as the history given me by the mother was a suspicious one and led me to believe at that time that it was an extra-uterine pregnancy. She returned with the daughter April 15, 1893 and I was called to see her with Dr. Griffith. At the time I saw her with Dr. Griffith she presented the appearance of a woman in the seventh month of pregnancy, fairly well nourished, good spirits and fairly good general health.



On examination we found a firm unyielding tumor extending two inches above the umbilicus centrally located slightly movable, not painful to the touch or on handling. Dull on percussion, no fluctuation, no fetal or placental sounds. Digital examination located the uterus, a little enlarged, rather high under the growth to the front with the cervix pointing backwards. The tumor being posterior and to either side was under firm pressure slightly movable, giving the same resistance to pressure as was noticed on abdominal palpation. The diagnosis at this time was doubtful; the theory of ectopic gestation was the most acceptable one. When the incision was made down to the tumor, it was noticed that the knife cut down upon the growth at the lower angle of the incision, no peritoneum existing at this locality, but on extending the cut upwards a peritoneal layer over the growth was discernible and on opening this layer the intestines were seen lying loose above the growth. This at once convinced us that the tumor was extra-peritoneal, or in other words in the leaflets of the broad ligament. Now the difficult part of the operation began; the tying off and separating the omental adhesion was a slight task as it was adherent only in one place, but the entire capsule had to be tied in sections in order to remove the sac from its imbedded position in the pelvis. This could be done only by pushing a hemostat under a small section of this vascular membrane and tying it in sections by pulling a ligature (silk) through the opening made by the forcep, and tying it tightly. This tying and cutting process had to be carried around the middle of the tumor. On the upper and posterior aspect of the growth an intestine was found attached to the tumor for a distance of nine inches; this was brought about by the mass, as it had ascended out of the pelvis; stripping the peritoneum from the posterior wall of this cavity and separating the layers of the mesentery up to the gut by the same gradual process that had early in the pregnancy pulled apart the two layers of the broad ligament.

After making a complete circuit of the growth, the tumor was easily lifted from the bottom of the pelvis; this locality did not require a single ligature. During the operation at one place on the tumor at the side next to the uterus (which was located as we had diagnosed) some very large vessels (arteries) were noticed, and at this same locality muscular tissue (Fallopian tube) was discernible. The tube at this location was evidently spread out and lost in the walls of the growth. Some remains of the organ of Rosenmuller could be plainly seen at this same location. At the left side of the uterus near the tubo-uterine junction the peritoneum was so firmly attached to the uterus that the organ was cut into and gave rise to considerable hemorrhage; this was controlled by a stitch or two and the membrane divided at a greater distance from the uterus. After the growth was removed the uterus was examined and found to be a *little large* with a sound tube and ovary on the left side, with the remains of a ligatured tube on the right side. The bottom and sides of the pelvis on the right side were stripped of peritoneum. The ureter and uterine artery could be distinctly felt immediately under the finger on that side. The bleeding from the surfaces was quite profuse but not alarming and was easily controlled by hot water. *Irrigation* and *drainage* used. The operation was a


Mrs. S., four weeks after operation forextra-uterine pregnancy.

long one but the patient left the table in good condition and two hours later had a pulse of 80. On examining the mass after its removal a full formed eight pound child was found in its interior. The sac surrounding the child had compressed it until the anatomical landmarks used in diagnosing pregnancy by palpation were completely obliterated —every nook and corner of the sac was filled with baby and placenta. The placental site was at the top of the sac, the cord down over the left eye of the child. The face of the child was turned to the mother's right side, the left shoulder and side of the face were the pelvic presenting parts. The body was strongly flexed, the feet being above the head, the breech pointing to the mother's right side.

The child had a complete envelope of its own and was beyond doubt primarily a tubal pregnancy which had ruptured into the broad ligament and in this location the child had continued to grow up to full term. The child then or soon after dying, remained encysted up to the time of operation.

The child was as well preserved as though it had been in a specimen jar of a well kept pathological museum. The liquor amnii had been absorbed; a small amount of meconium was found in the sac. No lime salts had been deposited in the child or its envelopes.

These cases are rare; a record of a case in the museum of the College of Surgeons of London says the child was retained for fifty-two years and was found to be as fresh and unaltered as a newborn child. In this case the specimen was removed postmortem.

I report this case in full because of its interest from a diagnostic and pathological standpoint. The steps of the operation and the results make it a unique case (barring the case referred to by Thornton, Trans. Obst. Soc., Vol. xxiv, p. 81).

The sac, placenta and child were removed without opening the envelopes. The cases (except the one referred to by Thornton) heretofore, as far as I have been able to find out, have been treated by opening the sac, stitching it into the abdominal incision after removing the contents either in part or in whole.

This was originally beyond doubt a tubal pregnancy, and the manner in which the child reached its new location and continued to thrive and develop is certainly understood by any one acquainted with the anatomy of the mesosalpynx and its relation to the Fallopian tube. The rupture, which must have been a gradual one, took place early in the development of the embryo and on the under side of the tube, the fetus being gradually extruded or growing in the direction of least resistance descended between the leaflets, until it reached the floor of the pelvis.

She evidently had a hemorrhage about the tenth week; this bleeding was controlled by the pressure exerted by the broad ligament. The front and back layers becoming more and more distended by the growth of the child until on the right side the pelvis was robbed of its peritoneum, the bladder and part of the rectum also being denuded of this membrane. The remains of the tube were spread out over the sac thus assisting the broad ligament in roofing over the fetal membranes and their contents. The tubal mucous membrane plays a very trifling part in the forming of the placenta in ectopic gestation. The placenta in these cases is derived almost entirely from the fetal structures.

The villi are developed early on the outer side of the ovum and receive the blood from the allantois. These villi insinuate themselves into the folds of the tubal mucous membrane. With the growth of the ovum these villi increase in number and size, the mucous membrane becoming thinner as the tube dilates and less and less of this structure in any one locality enters into the make up of the fetal attachments, so that ultimately the placenta when formed is, strictly speaking, made up only of fetal structures. In the case just referred to the placenta was situated at the upper side of the child and was pushed well up into the abdomen. This locality presents the most unfavorable site for the placenta to grow and nourish the child. Hemorrhages are more likely to occur in the latter months if the placenta is located above the child. This is due to the constant stretching of the peritoneum, producing a partial separation of the placenta the same as takes place in placenta prævia. At the time of operating more danger is encountered from hemorrhage and wounding intestines if the placenta is situated above the child.

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## ECTOPIC PREGNANCY: ITS COMPARATIVE SYMPTOMATOLOGY AND TREATMENT.

Read before the Section of Obstetrics and Diseases of Women at the Forty-fourth Annual Meeting of the American Medical Association.

BY JOSEPH HOFFMAN, M.D.
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Amid the conflicting claims as to the positive or presumptive symptomatology of ectopic gestation, the candid inquirer may very justly pause to join with another who long ago exclaimed: What is truth? In these days when hastily written reports are hurried into press, not to increase the general fund of information on a given question, but to call attention to the existence of the writer, too great care can not be taken to discriminate between opinions that come of experience, either practical or critical. and those that arise from accidental contact with cases of a certain class, not before met by the reporter, who consequently hastens to record his unique diagnosis and procedure, taking it for granted that his case is typical, and that his knowledge of the matter is therefore all-embracing and positive.

Nowhere is this aspect of affairs more urgent than in the advanced abdominal surgery of to-day. Opinions are held, stands are taken, contradictions are given to experience and logically adapted procedures, by those who have neither experience, nor the judicial mind to weigh the value of differences, failing in which their claims are ridiculous to those who know them, and terribly misleading to those confiding in them. Surgical results are not to be expected from neophytes or pretenders; neither from the results or claims of these are deductions to be made, except to mark their disastrous work as the shoals upon which life is lost and real surgery wrecked. At the beginning of our inquiry we are met with many difficulties arising, in addition to such as those cited above, from the fact that men in whom by name and reputation we are led to rely upon, are so widely at variance in reference to their expressed views relative to the diagnosis of ectopic gestation. So far as diagnosis is concerned, the term may be almost used synonymously with symptomatology, for upon the latter the former must depend, so that when we find a writer holding that there is a positive chain of symptoms, or a set of symptoms, in connection with which a physical examination will or will not point to the presence of ectopic pregnancy, we will find that he will also claim his ability to diagnosticate the existence of the condition. Winckel for instance, whose experience up to the writing of his late book on obstetrics records an experience of thirteen cases, claims that the diagnosis is not so difficult, and substantiates his claim by the assertion that he had proved his diagnosis, either by the elimination of fetal parts or by autopsy. It may be here premised that a diagnosis that is made either by postmortem or by after-discharge of fetal bones, is scarcely to the purpose, and while valuable as pathological records, have no value from a surgical point of view, except to condemn and repudiate the reasoning that allows such procrastination with its unfavorable and unfortunate results. The misfortune is that those who most widely argue the possibility of exact diagnosis, have had the least, and in many cases the most meager, abdominal experience. They believe that it is possible to say positively that this or that swelling is the result of an ectopic gestation, because they do not understand the various train of pathological conditions that have their manifestation in pelvic fullness, tenderness, throbbing and the like. Failing to appreciate the multiplicity of such disorders, they naturally lay especial stress upon that which they are looking for, and accordingly find what they are seeking, not on account of their superior knowledge, but because of their greater inexperience. If it be true, as is generally acceded, that most of us make a diagnosis by exclusion, it stands out clearly that the less we have to exclude, the sooner to us is a diagnosis possible, or clear; hence we find that men who claim a positive symptomatology in this condition, are constantly making extreme errors, of which we only hear by accident, and when discovered, are explained away by the assertion that such errors were made by the unusual complications existing, when it is plain to the more experienced gynecologist, that this apparent exception only proves the rule, for in ectopic pregnancy the unexpected is always happening, and is at the bottom of all the discrepancies of opinion concerning it, where any experience has width sufficient for latitude of expression. If any one of us sets out with the idea that, given a certain train of symptoms, pointing in the main to an ectopic pregnancy, this is infallibly present, of course the diagnosis is always made; when it is missed the case is not reported. It will thus be readily understood that the impression of exact and uniform diagnosis is a totally unfair one, and that it is not at all to be relied upon. The trouble is, therefore, in the experience of the diagnostician as an operator. Theoretically the distinction between pregnancy natural, and pregnancy ectopic is so wide that only a fool could be deceived. Practically we know that often a most careful examination in the simplest cases can not decide the matter. Now when this is true of uncomplicated conditions, the difficulty at once increases in a geometrical ratio in complicated ones. We must remember that pregnancy, whether intra- or extra-uterine, is not the only condition that causes enlargement, swelling and softening of the uterus. All these conditions are simulated by totally variant causes, having nothing at all to do with gestation in any form. If now we go on to the other recognized symptoms, such as suppression of the menses, irregular periods, nausea, swelling of the breasts, we shall find that all of these are simulated in miliary disease of the ovaries, and that in addition there is here an ectopic swelling, lateral or retro uterine, with tenderness and throbbing, totally misleading except in the unmarried, while in other cases, only the probability is diminished, and the diagnosis is not certain. In these cases, too, another misleading feature is the uterine discharge. for this is so irregular that it will be impossible for the most careful observer to decide positively whether the decidua has been expelled or not. To cap all, the temperature is misleading. Nor is this the only perplexity, for the size, softness, and appearance of the uterine structure, all suggest pregnancy. Running parallel with these symptoms, are those of the stomach, than which nothing can be more capricious, and taken together with the frequent abdominal tenderness, often amounting to well developed attacks of peritonitis, the symptomatology of ectopic gestation is so near complete, that nothing farther in the majority of cases would suggest itself. Probably the most misleading cases of all, are those in which there is ectopic, complicated by pelvic tumor of another sort, or where there is true pregnancy, with pelvic inflammation, tubal or other, or where both intra- and extra-uterine pregnancy are associated. The operator who has met these conditions, can always be relied upon to confute the vaunted easy diagnosis. As I have before noted, theoretically the diagnosis is easy to differentiate, while practically, it is most perplexing. A case of my own may be here cited with profit. A woman thirty years old, one child eight years old, never after pregnant. Menstruation not missed, was taken with violent abdominal pains, with some discharge. Examination revealed a uterus slightly enlarged, so far as could be distinguished, through thick abdominal walls. The lateral tenderness was especially marked on the right side, and the whole abdomen was tender and swollen. The bowels were freely opened, but in spite of this, the pain, swelling and rise of temperature continued. The odor of the discharge was distinctly placental. Operation was decided upon, with diagnosis of ectopic pregnancy. The condition revealed was double sided pyosalpynx, and peritonitis, combined with pregnancy, which indeed was so obscure as to be questioned by my assistant, who being present will no doubt refer to the case. The appendages were angrily inflamed, and nothing was to be done except to remove them. The woman made a good recovery, in spite of her miscarriage four days after operation. There will no doubt suggest themselves other steps, to have confirmed or negatived the diagnosis, but these may be noticed in the discussion. The diagnosis of ectopic pregnancy in the presence of fibroid tumors of the uterus, is an exceedingly interesting topic. Strahan makes the exceedingly naïve criticism that it is hard to understand how with bi-manual examination, and a little common sense and prudence, a mistake could be made between the early stages of extra uterine gestation and a small fibroid of the uterus. But the matter can not be thus lightly dismissed. The poet has it, that

> "Experience joined with common sense
> To mortals is a Providence."

The common sense may be of the best, but if the providence be not present in the shape of experience, alas for diagnosis. Not only may an intra-mural fibroid simulate an interstitial pregnancy, without pregnancy, but it may produce abortion in natural gestation, and afterward, the tumor still persisting, may simulate an interstitial ectopic pregnancy. The simulation is all the more complete, because mammary symptoms, hemorrhage, and uterine spasm, all combine to mislead the physician. Pregnancy in a fibroid tumor, which, after conception has taken on a rapid growth, when the portion of the uterus containing the fetus is posterior or lateral, or after the fetus has died, may puzzle the most skilful diagnostician. Not only are the cases in which true pregnancy exists thus found to be difficult of diagnosis, but a second class of cases arises, in which there is no pregnancy at all, but ectopic is speciously simulated—to-wit, in dermoid and ovarian cysts. Ovarian cysts have again and again been diagnosticated as ectopic pregnancies, while dermoid tumors even after removal in postmortem examination have been recorded as such, as is instanced in Campbell's "Memoir on Ectopic Gestation." A case of ectopic gestation on one side with a dermoid tumor on the other side of the pelvis has come under my own notice for operation, and it will be readily understood how a more misleading state of affairs could hardly exist. If the dermoid contain fetal bones, and other dèbris, digital examination may do little more than perplex. In these cases miscarriage after miscarriage is apt to supervene, and the tumor persisting, after the discharge of placental débris, as is a common occurrence in ectopic gestation, the diagnosis is easily reached of ectopic pregnancy. One such case has come under my care, in which the diagnosis of pelvic tumor was made, but from my present knowledge of the subject I could hardly escape the suspicion of ectopic gestation, and suspicion in these cases often is the sum total of diagnosis. In any pelvic tumor, where suspicion points to ectopic pregnancy, I take it that operation should settle the diagnosis in competent hands. Where the growth has been rapid, it does not necessarily follow that the case is one of ectopic pregnancy, for fibroids may take on an almost mushroom celerity of growth, and the same is true of cancerous disease. In the latter condition, however, cachexia is an almost unfailing symptom which should be a great aid in differentiating it from ectopic pregnancy.

*Diagnosis.*—We have now reached a position where an opinion as to the merits of positive diagnosis may be reached. We may say, then, that here we have a disease in which the probability of its presence can often be safely affirmed, after certain periods; first after rupture; second, after the fetus has become viable; third, in the presence of discharging fetal remains either through bladder, rectum, or umbilicus. It is almost ridiculous to consider the last condition under the head of diagnosis. As to the diagnosis previous to rupture, since a majority of cases are called to our attention subsequent to rupture, and since it is the rupture that attracts attention to these cases. it follows that if a diagnosis is made, it must be in the minority of cases. The simple fact that of all ectopic pregnancies so few come under observation for treatment or examination, unless we except the so-called electrical cures, must of itself stand a challenge that there are any symptoms which are so peculiar as to excite the attention of the women in which the accident occurs. When even rupture occurs, most women consider that they have an attack of colic and when the decidua is passed, they regard it as a miscarriage. That itself may be a most misleading symptom to the physician. The diagnosis therefore of the remaining cases, is best considered from the standpoint of the symptomatology, to which we have already devoted considerable attention. To repeat, the diagnosis must be after the conclusion that a pregnancy exists. First in these cases, we must say that the symptoms are those of ectopic gestation, for be it remembered, normal pregnancy must be excluded.

Winckel's assertion that ectopic gestation is more readily diagnosticated than the normal condition is one that is safely left with himself. It is hardly worth while to dispute it. The misfortune is that this German author claims a position which I, for one, hesitate to assign him. His abdominal experience does not justify his sweeping statements in diagnosis. If from the date of a supposed conception, of sexual congress, in cases whose exact pelvic condition was previously known, we could have our patients constantly under observation, there is no dispute that pregnancy if it occurred, whether ectopic or normal could be diagnosticated. But this status of affairs is for the most part impossible and can not enter into our calculations. In the cases therefore that come under our hands for diagnosis, previous to rupture of the ectopic cyst, all the contradictions and variations in the symptomatology noted above, must be accounted for, and the greatest latitude allowed for irregularity in symptomatic expression. In a patient of my own, suffering with frequent miscarriages, I found the following condition: Taken with a sudden attack of pain she resorted to ordinary remedies. I saw her a few hours after the attack. She had complained of antecedent pain on the right side. Her catamenia had failed for two months. When I saw her there was a slight show of blood, and she was in collapse. She had done a large washing during the day upon the evening of which I was called to her.

*Treatment.*—After the futile resort to mere experiment in dealing with this dread disease—delay, puncture by electricity, electricity without puncture, and puncture with injections of morphine, still with their advocates—I can do no better, nor pay a more fitting tribute to our Stephen Rogers, who rising above, before the recognition of the possibilities of abdominal surgery, and cleaving with an inspiration of surgical good sense, the superstition of the accepted fatality of this disastrous accident, enunciated his belief in these words:

"*The peritoneal cavity must be opened; the bleeding vessels must be ligated.* He, indeed, must be a madman who under such circumstances would neglect anything in his power to secure the chances such an operation would afford of saving the life of his patient."

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THE ELECTRICAL HORSEWHIP.—It seems doubtful whether objection can be brought against the latest form of horsewhip, which is constructed so as to give a slight electrical shock to the animal. The handle, which is made of celluloid, contains a small induction coil and battery, the circuit being closed by means of a spring push. The extremity of the whip consists of two small copper plates insulated from each other, each of which is provided with a tiny point. The plates are connected with the induction coil by means of a couple of fine insulated wires. As a means of surprising a sluggish animal into doing his best work without the infliction of physical pain the electrical horsewhip will by many be hailed with gladness.—*Hartford Times.*

# METHODS OF REMOVING THE UTERUS FOR UTERINE FIBROIDS, WITH REPORT OF CASES.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY J. N. MARTIN, PH.M., M.D.
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Notwithstanding the free use of drugs, such as ergot, cannabis indica, etc., in various ways, and notwithstanding the persistent use of electricity with all of the modern appliances, there are many uterine fibroids that are but slowly or slightly altered for the better; and a large number continue to grow with increasing deleterious results, despite the use of these agents.

This leaves a large and, as I have found from experience, a difficult field for surgical work.

This short paper is devoted exclusively to the practical surgical side of some methods of removing the uterus to get rid of these perplexing growths.

These methods in their different phases I will illustrate briefly with cases, that I may show more clearly why we adopt different lines of procedure in operating upon this class of patients, and also to demonstrate that it is difficult or impossible to formulate a definite plan of action in some until the operation is already begun and we can see the intra-abdominal relations of the tumor.

I believe that a tumor causing sufficient trouble to warrant a laparotomy is so far incorporated with the uterine walls, as a rule, as to necessitate the removal of the uterus.

Rarely, we find a simple case—a sub-peritoneal tumor with loose attachment that can be easily removed. It has not been my good fortune to meet many such easy cases.

In many cases it is best or necessary to remove the uterus with the tumor. This is the great and difficult field for surgical work in dealing with uterine fibroids. It includes the large ones, the multiple ones, the fibro-cystic ones, the complicated ones and nearly all of those that are death-dealing to our suffering patients—if they are not removed by surgical means.

It requires more nerve and more skill to deal with them properly than is required in almost any other field of surgery. The operation in the beginning may be comparatively easy, and before completion be prolonged into hours of the most careful, skillful, difficult and nerve wearing work imaginable. One who has entered this field realizes this fully, and one who contemplates crossing its threshold should be prepared to meet all the complexities that the worst case presents; for such he may find his first case to be, before his operation is successfully completed.

Some of the most troublesome fibroids to deal with are the intra-ligamentous ones that unfold the broad ligaments, displace organs, and are prone to form numerous and large adhesions. My experience with these teaches me that they are very vascular from original attachment and from vascular adhesions; that they grow more rapidly and cause more pain.

In some cases the difficulties in treating these surgically are almost insurmountable. I begin the operation after abdominal incision by incising the peritoneum over the tumor from side to side, and then strip it down anteriorly and posteriorly with my hands and turn the tumor out slowly, ligating and cutting adhesions; being sure to ligate the ovarian and uterine vessels and then sever as much of the broad ligament as is necessary to liberate the tumor and tumor side of the uterus. After the tumor is liberated, except the uterine attachment, pull it up and toward the side on which it developed; then proceed to ligate the ovarian vessels on the opposite side and cut the ligament under the tube and ovary, preventing reflux with long forceps, à la Baer.

Afterwards ligate the uterine vessels, then strip down the peritoneum in front and behind the uterus, being sure to incise it across, a little above the bladder (an inch or so); about the same or little lower behind. The next step will depend upon the condition of the patient, the relation of the tumor to the lower zone of the uterus and the cervix, and how certain I feel concerning the control of the hemorrhage. If I feel sure there is no danger of hemorrhage, I cut away the uterus and tumor without the elastic ligature or serre nœud, provided the tumor is high enough for a pedicle below it. If I fear hemorrhage, I apply the serre neud and test the condition. If there is some oozing, tighten the serre neud slightly, trim the stump with wedge-shaped cavity, leaving two flaps which are coapted with deep interrupted catgut sutures and the peritoneal edges with superficial catgut sutures, and then remove the serre nœud.

Before coaptating the flaps, I cauterize the cervical canal and fill it with iodoform. In the last case I passed iodoform gauze through the cervical canal, and left the end loose in the vagina.

If there is still oozing after flaps are united by sutures, pass deep ligatures around the outer fourths of the stump and tie. Then drop the pedicle back and unite the anterior and posterior folds of peritoneum with catgut sutures to insure against the intestines dropping into the fresh wound.

If there is oozing, and the patient's condition requires speedy termination of the operation, apply the serre nœud and fix the stump in the lower abdominal wound if the pedicle is long enough. If it is not long enough, ligate the outer fourths with strong silk, or the whole pedicle, and cauterize the end of the stump thoroughly according to Dr. C. T. Parkes, and with a few stitches unite the peritoneal folds.

The following cases will illustrate these points:

1. Operated upon Jan. 6, 1892. Married twenty-two years and sterile. Upon examination a hard tumor was found filling the pelvis and extending two inches above the umbilicus. After abdominal incision, I incised the peritoneum laterally from side to side, separated the tumor and uterus from the bladder and rectum, tied off the adhesions, applied the serre nœud and removed the tumor, uterus and its appendages. At this time the patient developed unfavorable symptoms and I hastened the completion of the operation by fixing the stump in the abdominal wound. The shock proved to be of short duration; the patient made an excellent recovery and is now well and happy.

The next case was operated upon the last of February, 1892. Upon examination a uterine fibroid was found that filled the pelvis and extended to the sternum. The patient was greatly emaciated, pale and very weak. On account of the many adhesions, the operation required two and a half hours of hard work. She stood the operation fairly well, considering her weak condition, until near the close, when all but the cervical attachments were severed, and then she showed marked signs of collapse. I applied the serre nœud quickly, cut away the tumor and uterus and fixed the stump in the abdominal wound. The tumor weighed forty-two pounds and had one cyst that contained twenty-eight and one-half pounds of pus, as Prof. Gibbes' examination showed. The patient made a rapid recovery, and went home well six weeks after the operation. I believe both of these cases would have been lost by prolonging the operations after these alarming symptoms arose.

When the tumor is not intra-ligamentous and the relations and conditions are such as not to demand total extirpation of the uterus, but the cervix may be left, I remove the tubes and ovaries with the uterus as previously described.

Ligate the ovarian and uterine vessels, cut across the uterus anteriorly and posteriorly, strip down the peritoneum and separate the vesical fold and bladder, also the rectal fold; then ligate bleeding vessels and cut away the uterus and tumor, remove wedge-shaped piece, cauterize the cervical canal, dress with iodoform, coapt the flaps of the pedicle and the peritoneum, unite the peritoneum over the wound; all to be done after the same manner and with the same precautions as previously described. In all such cases, drain from the posterior cul-de-sac into the vagina with a glass drainage tube for from four to seven days.

The six cases in which the stumps were treated intra-peritoneally were operated upon May 28, Oct. 19 and Nov. 26, 1892; Feb. 18, March 11 and April 26, 1893.

The one operated upon Feb. 18, 1893, died from cerebral cause and is reported later in this paper. In the one operated upon March 11, 1893, the drainage tube came out the second day after the operation during an attack of coughing and was not replaced. This resulted in rapid closing of the opening, retention of the secretions and elevation of the temperature to 102 degrees. The tissues were separated and a rubber drainage tube was inserted and kept in four days. Seven hours after its introduction and irrigation with a sat. sol. of boracic acid the temperature was 99 degrees, and the patient made a good recovery.

The other four cases made uninterrupted recoveries.

Sometimes the fibroid forebodes malignancy or is incorporated with the uterine walls so low down as to necessitate total extirpation of the uterus. Four of my cases were such that total extirpation of the uterus was the only procedure left me.

In one case operated upon May 2, 1893, the cervix was spread over the tumor and enlarged uterus so that it did not project a half inch from the surface of the hard mass. Upon vaginal examination a round, hard mass the size of an infant's head at birth could be felt filling the pelvis, and it extended up to the umbilicus.

Three other cases under this head which were operated upon more than a year since, Dec. 30, 1891, Feb. 17, 1892, May 19, 1892, had tumors ranging in weight from eight to over twenty-six pounds. They involved not only the body of the uterus, but the cervix as well. These were all intra-ligamentous, and were long and exceedingly difficult operations.

When total extirpation, or Eastman's method, is decided upon, I draw up the tubes and ovaries and clamp below them with long forceps to prevent reflux, tie off the broad ligaments in sections as close to the uterus as possible, being sure to ligate the large ovarian and uterine vessels with strong silk, leaving one end of each ligature long, so all of them can be brought into the vagina, and by traction on them the stumps can be turned down into the vaginal opening. Some object to this method of leaving the sutures, and I question it sometimes; but the results are good. I use long forceps along the sides of the uterus to prevent reflux from the uterus during the operation.

Before ligating and cutting the lower segments of the broad ligaments, I incise the peritoneum across the uterus in front and behind, strip down the peritoneum with my hands and blunt instrument and separate the bladder and bowel. Then perforate the vagina with forceps and incise the vault of the vagina anteriorly and posteriorly with blunt pointed bistoury or scissors, with the fingers of the left hand in the vagina to guide them, and then tie all bleeding points.

Finally, ligate the lower segments of the broad ligaments with strong braided silk (avoiding the ureters), and cut them and remove the uterus and the tumor.

In two cases I was obliged to apply the serre neud temporarily and to cut away most of the tumor and uterus before I could remove the cervices, as the tumors were so large.

After the uterus and tumor are removed, wash out thoroughly with sterilized water, draw the ligatures down and invert the stumps; dress with iodoform gauze. Unite the peritoneal flaps in the wound with interrupted catgut sutures.

If the patient's condition is bad, the operation may be shortened considerably by clamping the lower segments of the broad ligaments with forceps per vaginam and leave the forceps on a few days. Remove the ligatures when they separate, in from six to fourteen days.

Dr. Byford's method of treating the stump by vaginal fixation is no doubt good, as his results show, but I have not practiced it, and, as it has been described so often I will not repeat it here.

In all cases, the abdominal wound is to be closed and treated as in any laparotomy, and the patient is to be prepared the same for the operation, except the vaginal cleansing must be more nearly perfect.

Of thirteen hysterectomies for fibroids, two died. Of the two that died, one had a tumor that filled the pelvis and abdomen and extended up to the sternum. The abdomen was as large as a large full term pregnancy; her circumference at the umbilicus was forty-six inches. In order to deliver the tumor, it was necessary to make an incision from a little above the pubis to the ensiform cartilage and laterally through one rectus muscle. There were numerous and large adhesions binding the tumor to everything within its reach. The uterine cavity was seven inches long.

It was a long and difficult operation on account of the many adhesions, difficulty in delivering the tumor and the numerous bleeding points.

The patient died of shock the following day. This was a total extirpation.

The other patient died eight days after the operation. Everything progressed favorably for seven days, when she suddenly became paralyzed on one side, and the next day she died. Evidently a cerebral cause. The other cases have made good recoveries.

In my work in this line of surgery I endeavor to be aseptic, and to combine what seems to me the best points gleaned from observing the work of eminent American and European gynecologists who are abreast of the times.

I do not believe in any "new method," so-called, for removing the uterus for fibroids, unless it specifies the special conditions and cases to which it is adapted, for then only is it of value.

I believe there is no one method, new or old, adapted to all, when we consider present relations and ultimate results.

I approve that method with conditions favorable which leaves the cervix and its stump treated intra-peritoneally and the lower segment of the broad ligament, for the following reasons, viz;

1. It leaves a stronger floor for the pelvis, and it leaves the vagina in a better condition than when the cervix is also removed.
2. It is better than fixing the stump in the abdominal wound, as it permits of free dilatation of the bladder and there is no traction. The recovery is more rapid, as there is no sloughing mass left to separate and interfere with the healing of the abdominal incision. The operation can be completed with a shorter pedicle.
3. The vagina is left in a better condition than with Byford's method. By his method, the cervix and tissues about are twisted out of shape and a mass is left to separate. However, if this method is to be adopted it is necessary to be sure of the control of the hemorrhage, exercise perfect aseptic methods in the operation and toilet, and to be certain, drain from the posterior cul-de-sac.

*Appendix.*—Since writing the above, I did my fourteenth hysterectomy, May 23. There were seven fibroids attached to the uterus, ranging in size from a hen's egg to an infant's head. The entire mass was wedged tightly into the pelvis. The patient is making an excellent recovery.

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## PORRO-CÆSARIAN SECTION.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

*BY J. H. CARSTENS, M.D.*

PROFESSOR OF OBSTETRICS, DETROIT (MICH.) COLLEGE OF MEDICINE; GYNECOLOGIST TO HARPER HOSPITAL, ETC.

Having had the pleasure of reporting a successful Porro-Cæsarian section in the *American Journal of Obstetrics* last year, it is peculiar that I should be able to report another case within six months. The second case is as follows:

Mrs. S. is 23 years old; her mother died of pneumonia at the age of 55; her father is living and healthy; she has two brothers and three sisters living; one of the latter had six children, the other had five. They were always delivered by a midwife. Mrs. S. is of German parentage, but was born in this country. In the fall of 1891, I was called upon by Dr. W. J. Brand to help him deliver her. She had been under the care of a midwife for twenty-four hours when he was called, and failed to deliver her with forceps. As the child was dead the only thing to do was to perform craniotomy. Even after craniotomy it was quite difficult to deliver on account of the narrowness of the pelvis. When this was finally accomplished I took careful internal measurement with the pelvimeter and found an antero-posterior diameter of less than three inches. She made a slow but good recovery. We told her that if she ever became pregnant again that it would be necessary to bring on a premature labor. She was very anxious to have a child and did not think that a seven months child would live, although told of the danger and need of Cæsarian section if she went to full term. She kept very quiet when she again became pregnant and only told Dr. Brand two weeks before her expected time. It was then too late and we made all preparations to take her to the hospital as soon as labor should set in.

September 24, 1892, she was taken with labor pains, so we took her to Harper hospital in the ambulance at 8 P.M. I wanted to wait with the operation until in the morning, but found that the cord was presenting and being afraid that compression might kill the child before morning I decided to operate immediately. She was prepared as for any abdominal section and I operated at 9. P.M. in the presence of many physicians of this city. The bag of waters was first ruptured and then the usual incision was made. The uterus was rolled out à la Müller, an elastic ligature applied, then the uterus quickly opened and the child weighing 8 pounds removed. I was undecided to do a Porro- or a so-called classic Cæsarean section. All the physicians present were unanimous for the Porro, hence I applied a clamp. I removed the uterus, tubes and ovaries. The after treatment was like any other coeliotomy and her recovery smooth, as the Germans would say. She nursed her child from the first and left the hospital twenty-five days after the operation. To-day she is the picture of health, as well as her child.

The only question in my mind is, whether we should do a Porro or preserve the uterus? If the child had been dead I would have done a so-called classic Cæsarean section. Still the life of one child always hangs on a thread and her future chances for motherhood are destroyed in my patient. What shall we do? If we preserve the generative organs, the woman will again and again become pregnant and she must be repeatedly subjected to the most critical operations of surgery. Is this right? Is it desirable to propagate the hereditary tendency? The moral questions involved are still in doubt in my mind, hence I wish a thorough discussion by the able members present.

You will, of course, see that I am inclined to the Porro because: 1, it can be quickly performed. 2, it is less dangerous. 3, the woman's future is free from such dangerous operations.

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## THE CAUSATION OF THE DISEASES OF WOMEN.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY CHARLES P. NOBLE, M.D.

PHILADELPHIA.

Within recent years activity among gynecologists has taken the form of improvement in the technique of operations; and as an outgrowth of the large number of operations which have been performed, the pathology of diseases of women has likewise been improved. Comparatively little has been written concerning the causation of the diseases of women, although the subject is one of great importance, in view of its bearing upon preventive medicine. Only as the causes of disease are made known to the profession at large, is it possible to take measures for their prevention. And in gynecology, especially, prevention is far better than cure.

The principal causes of the diseases of women are:

1. Imperfect development of the sexual organs.
2. Gonorrhea.
3. Septic inflammation following child-birth.

4. *Lacerations due to child-birth.*

5. Miscellaneous causes, including constipation, erroneous habits of life, and errors of dress.

1.—*Imperfect Development of the Sexual Organs.*—The influence of imperfect development of the sexual organs as a cause of diseases of women, cannot well be over-estimated. At the present time not so much is said of the influence of this factor in producing disease, because it has been more or less lost sight of since tubal and ovarian pathology has so much occupied the attention of gynecologists. The experience of every observant practitioner demonstrates the prevalence of imperfect development, and also its influence in producing various diseases of women. As a rule, when the development of the sexual organs is arrested, the development of the body, as a whole, is also interfered with. Such women, almost without exception, belong to the class of neurotics, and they are especially liable to all manner of neuroses, including, especially, chorea, headache and neuralgia. The most striking signs of this condition are the late development of puberty, the imperfect and painful character of menstruation, and the fact that the history of semi-invalidism, almost without exception, can be obtained. Puberty is often delayed even as long as the eighteenth or nineteenth year or longer. Menstruation is always painful. The pain belongs to the type of so-called ovarian dysmenorrhea; that is to say, it begins one or several days, or even a week, before the menstrual flow, and is felt especially in the ovarian regions. Reflex neuroses are common accompaniments, especially headache, disordered digestion, or even sick headache. Uterine dysmenorrhea, due to the undeveloped condition of the uterus (especially of the cervix) which is in general sharply anteflexed, is frequently present. This is indicated by its paroxysmal character, and by the fact that, as a rule, it is much less marked after the flow has become fully established.

The reason why the development of the sexual organs of girls becomes arrested is not absolutely demonstrated. The influence of modern education as a cause has been much dwelt upon, and the evidence in support of this theory is very strong. The effect of the crowded courses and frequent examinations in our schools in developing the nervous system at the expense of the rest of the body, and later in breaking down the tone of the nervous system through over-work, has been abundantly proved. The emotional side of the female character likewise is stimulated. As a result of these conditions the digestion of growing girls is apt to become deranged, and their sleep likewise to be disturbed. As a further consequence anemia and depraved nutrition follow, aggravating the neurotic conditions already engendered and thus completing the vicious circle. When such girls arrive at the age of puberty, especially if at the time they are being crowded with a multiplicity of studies to enable them to enter a fashionable finishing school, the demands upon the nervous system to enable them to accomplish their tasks are such that the processes which are necessary to bring about the proper development of the sexual organs are not brought into play—enough vital force is not left over to accomplish this result. The testimony of urban practitioners is unanimous upon this point, hence it must be considered as established that too great mental occupation directly hinders the development of the sexual organs. And not only that, but at the same time breaks down the tone of the general nervous system.

Other causes, however, must be considered. Some of the most marked cases of arrested development of the sexual organs which have come under my notice have been among the poor. These girls not only had not been forced at school, but in not a few cases they had never been to school. In some of them it seemed to me that the cause was too early and too laborious work, especially in mills. I have had numerous patients among mill operatives who had gone to work as children in mills, and who had worked full time during the years when the greatest development takes place. In these girls it was probable a lack of fresh air, of out-of-door exercise and of an abundance of nutritious food, together with too much work that was at the bottom of the difficulty. A curious class of cases but little understood is that in which extreme corpulency is present. I have seen numerous cases in which menstruation was tardily established, never perfectly performed, and which ceased or became scanty and irregular between the twentieth and thirtieth years. Whether the imperfect character and early cessation of menstruation was due to obesity, or whether the obesity was due to the absence of menstruation I have never been able to satisfy myself. However, my own experience fully confirms the current opinion that obesity bears a certain relation to scanty and imperfect menstruation. The development of the sexual system in women is one of the mysteries of nature and the exact forces which bring it about will probably never be perfectly known, but it is rational to believe that the existence of good health about the time of puberty has much to do with its proper development. The care of growing girls, particularly between the age of nine and sixteen years, is a subject of the utmost importance, and the profession has no more urgent duty than to instruct mothers concerning the importance of the proper care of girls during that period. Girls who are inclined to be neurotic, and whose digestion and nutrition are at fault should not be treated in the same way as their stronger and more phlegmatic sisters. Their duties at school should be lightened, they should be more in the open air, and any functional disease which may exist should be cured. In this way some surplus vital force may be stored up to be called upon when necessary in the development of the sexual system. Also, when menstruation fails to appear at its accustomed time special care is necessary. It is at this time that therapeutics has the best opportunity to influence the patient. The health of all such girls should be carefully inquired into and all indications for treatment should be met. In particular, the administration of iron, arsenic and strychnia, and out-of-door exercise are to be commended. Such cases should not be lost sight of until menstruation is fully and perfectly established. I feel confident that if this plan be carried out, there will be fewer cases of dysmenorrhea and sterility upon the one hand, and of laceration of the cervix and perineum upon the other, and also fewer cases of chronic ovaritis and ovarian cystomata. I have purposely not made mention of the higher grades of imperfect development, and of the cases in which one or more of the sexual organs are entirely absent. These cases belong to a different category, from the standpoint of practical medicine.

2. *Gonorrhea.*—The fact that gonorrhea is a dis-

ease of women has, of course, been known for centuries, but a full knowledge of the course and results of the disease is a matter of the immediate present. Bernutz was the first author who had a proper conception of the disease, (about 1850). His knowledge was acquired as most of the exact knowledge of medicine has been acquired, by the postmortem study of cases. As physician to the Lourcine hospital, where he had a large venereal service, he had ample opportunity to study the disease. In his analysis of the ninety-nine cases of pelvic-peritonitis, upon which he bases his exposition of the subject, he gives as a cause of the condition, gonorrhea in twenty-eight cases.

Forty-three are considered to be puerperal, twenty menstrual and eight traumatic. Of the remaining twenty-eight non-puerperal cases there can be no question, when reading his report in the light of modern knowledge that almost all of them were gonorrheal. Bernutz, who was a very careful and accurate observer, cautions his readers against drawing the conclusion that so large a proportion of cases of pelvi-peritonitis (inflamed tubes and ovaries with secondary peritonitis) are gonorrheal in origin. He states that in his opinion the reason why this proportion existed in his cases was owing to the character of the hospital in which they were observed. Bernutz fully recognized the fact that gonorrhea not only involves the vulva, urethra, vagina and womb, but also the Fallopian tubes, the ovaries and the peritoneum. He reports numerous cases amply demonstrating these facts and treats the entire subject in a most intelligent manner. His observations, however, failed to make much impression upon the profession and it was not until Noeggerath, in 1873, published his paper on "Latent Gonorrhea in the Female Sex" that attention was called to the very serious ravages of gonorrhea in women. Prior to that time gonorrhea was looked upon as a mere trifling vulvo-vaginitis, of importance principally because of the fact that the disease might be communicated to men. The views of Noeggerath encountered much opposition and their spirit was not fully accepted until their truth was demonstrated by the work of the modern abdominal surgeons. It is now fully established that gonorrhea is one of the most important causes of uterine, tubal, ovarian and peritoneal inflammation. Exactly what percentage of cases of inflammation of the uterine appendages is due to gonorrhea has not been determined, although unquestionably the percentage is not inconsiderable. The opinions and experience of surgeons differ widely with reference to this question; and there is good reason to believe that the percentage depends upon the character of the community in which the surgeon resides. Urban communities containing large numbers of the poor and the vicious, and of the rich and immoral, undoubtedly have a higher percentage of cases due to gonorrhea than rural communities having a more decent population.

3. *Septic Inflammation following Child-birth.*—The results of septic infection in child-bed have been so prominently dwelt upon since the days of Oliver Wendell Holmes and Semmelweis that one can not, at this time, hope to offer any new ideas upon the subject. Increasing experience only serves to demonstrate the serious results of this accident. It is unnecessary to refer here to fatal puerperal septicemia. We shall concern ourselves only with those cases which have not had a rapidly fatal termination, and which concern the gynecologist as much or more than the obstetrician. Septic vaginitis, endometritis and metritis are well-known forms of puerperal inflammation. They frequently persist and require treatment after the puerperal period. Aside from the rapidly fatal cases, the most serious result of septic infection during labor is the spread of the septic inflammation to the uterine appendages, giving rise to salpingitis, ovaritis and peritonitis. This condition probably at times ends in perfect recovery. More usually it results, either in chronic inflammation of the appendages with the formation of adhesions to the neighboring structures, or in collections of fluid—serum, blood or pus—in the tubes or in the ovaries. The relative frequency of puerperal septic inflammation and of gonorrhea as the cause of inflammation in the uterine appendages is a mooted point. Most surgeons believe that the puerperal inflammation is by far the more frequent cause; others hold that gonorrhea is the more frequent cause, and they point out that inflammation of the uterine appendages following labor need not necessarily be puerperal in origin, because the puerperal inflammation itself may have been set up by a preëxisting gonorrhea. That this last claim is to a certain extent a valid one my own experience tends to show; but many accurate observations must yet be made before it can be determined with what frequency existing gonorrhea is the cause of inflammation in child-bed.

Another, but far less frequent result of puerperal infection, is acute inflammation or abscess of the broad ligaments—acute puerperal cellulitis and true pelvic abscess. Inflammation of the connective tissue of the broad ligaments formerly was believed to be the common form of puerperal inflammation outside of the womb; but when abdominal surgeons proved that what had been called *chronic cellulitis* in the *non-puerperal* state was in reality diseased uterine appendages, the tendency was to take extreme ground and to deny the existence of *acute puerperal* cellulitis and true pelvic abscess.

In addition to the varieties of puerperal inflammation described we have cases of phlebitis, and its associated condition, *phlegmasia alba dolens.*

As already remarked, it is not positively known what percentage of cases of tubo-ovarian inflammation is due to puerperal septic inflammation; but it is known that the percentage is a high one. Gonorrhea and puerperal sepsis together cause 95 per cent. of all cases of tubo-ovarian inflammation. The importance of this fact from the standpoint of preventive medicine can not be over-estimated. And the same is true of the curative treatment of gonorrhea and puerperal septicema. If both these conditions were treated early and vigorously, and if the treatment were continued for a long time, until the gonorrhea was cured, and the results of the puerperal sepsis removed so far as possible, there would be far fewer cases of chronic pelvic inflammation. Under the present methods of practice it is the disease which the gynecologist is called upon most frequently to treat.

4. *Lacerations due to Child-birth.*—Lacerations due to child-birth constitute an important class of the diseases of women. The relations of lacerations of the cervix uteri to sub-involution of the pelvic organs, especially of the womb, and to endometritis, has

been made known through the labors of American gynecologists, especially Dr. Emmet. For a time after the observations of Dr. Emmet were made public there was a tendency to magnify the importance of lacerations of the cervix, and succeeding that, a reactionary tendency to make light of the importance of this lesion, but the conclusion of the entire profession, based upon experience and common sense, practically supports Dr. Emmet in his original teachings concerning this lesion. It is not my purpose here to discuss the causes of lacerations of the cervix further than to say that my own experience is in accord with those who believe that many cases of lacerations of the cervix are directly due to the fact that the pregnancy has taken place in an imperfectly developed womb—the imperfect development being most marked in the cervix. Such a womb and cervix are not fitted to pass through the ordeal of labor unscarred. The cervix has to bear the brunt of the battle, and as a result of its imperfect development lacerates instead of dilating. This fact emphasizes the great importance of securing a full development of the womb.

Lacerations of the pelvic floor are of even more importance than lacerations of the cervix uteri. The giving way of the pelvic floor (the laceration of the levator ani and the pelvic fascia) is the foundation of almost every form of prolapse of the pelvic viscera. Cystocele, rectocele and prolapsus uteri are due almost without exception to lacerations of the pelvic floor.

5. *Miscellaneous Causes.*—Constipation plays an important rôle in the causation of some of the diseases of women. The fact that women very frequently suffer from constipation is well known. This is as true of young women as it is of their older sisters. Probably the principal reason for this is the in-door, rather inactive life which women lead; but an important factor is the habit which so many women form of having no regular time to have the bowels move. In this way the rectum is taught to tolerate the presence of feces which accumulate until the occurrence of headache, loss of appetite, malaise (symptoms of fecal absorption), force the patient to secure a stool, either by the use of an enema or by taking a purge. This over-filling of the rectum interferes with the pelvic circulation and in this way promotes congestion of the pelvic viscera. This habit predisposes to the development of hemorrhoids, also to uterine and ovarian congestion. It is usually assigned as one of the causes of retroversion of the womb, and of prolapse of the ovaries. I believe that it does predispose to both of these conditions. The full rectum can displace the cervix forward, and straining at stool, especially if the bladder chance to be full, can topple the womb over backward. Relaxation and loss of tone of the pelvic tissues, due to congestion, also predispose to retro-displacement of the womb and to prolapse of the ovaries.

Constipation aggravates the symptoms due to every variety of pelvic disease. This is brought about, partly by inducing pelvic congestion, and partly through the deterioration of the general health produced by fecal absorption and the contamination of the blood, and by the loss of appetite and disordered digestion.

### ERRONEOUS HABITS OF LIVING.

Erroneous habits of living favor the development of pelvic disease just as they favor the development of disease in other parts of the body. Pelvic disease may be produced, either by habits of indolence inducing a sluggish circulation and an atonic condition of the tissues, especially of the muscular system; or by habits of luxury, which usually involve the preceding, with the addition of irregular hours, more or less dissipation and the over-loading of the stomach with rich foods and wines; or on the other hand by too laborious and continuous work, over-taxing the strength of the individual, and by greatly increasing the intra-abdominal pressure, tending to displace downward the pelvic viscera—and in this way, at times, even in little girls producing complete prolapse of the womb.

### ERRORS IN DRESS.

Errors in dress is a subject of large importance, but it is only possible here to touch upon it. The principal error in woman's dress, as arranged at present, is, that by it the waist is unduly constricted. As this is brought about by means of the corset, which not only constricts the waist, but which also constitutes a brace confining the lower part of the chest, and also the abdomen, several results are induced. The first and perhaps the most important is the interference with respiration. It has been conclusively shown that the type of breathing of the female, normally, is the same as that of the male—diaphragmatic or abdominal, but owing to the pressure of the corset the excursions of the diaphragm are limited, and the same is true of the lower ribs and of the abdominal wall. The result is that the use of the corset has changed the type of woman's breathing to the costal, or really the upper costal. The principle of accommodation doubtless largely diminishes the interference with the normal circulation which this alteration in the normal type of breathing would otherwise produce. The second result of this method of dress is to make continuous pressure upon the abdominal vessels, and thus to interfere with the return circulation from the lower half of the body—promoting congestions in this region, which includes the pelvis. The third result is the displacement downward of the abdominal viscera, causing a protrusion of the lower anterior abdominal wall, and forcing the intestines down upon the pelvic viscera. In this way the displacement of the pelvic viscera is favored. The effect of the pressure of the corset upon the muscles of the middle portion of the trunk, and the support which the corset gives in holding the trunk upright (thus doing away with the necessity for muscular action in supporting the trunk), is to bring about the partial atrophy (or at least an atonic condition) of these muscles. The loss of normal tone in the abdominal muscles changes entirely the normal condition of intra-abdominal pressure, (favoring the displacement of the abdominal viscera), and takes away from the return circulation of blood in the abdomen one factor which normally is of great assistance in forcing the blood onward toward the heart.

Another error in the present mode of woman's dress is the manner in which the skirts are fastened to the body. This is by means of bands fastened about the waist. The effect of this method is that the entire weight of the skirts hangs upon the abdomen and hips. In women having a somewhat protuberant abdomen, practically the entire weight of the skirts is supported by the abdomen. This adds to the intra-abdominal pressure and tends to force the contents of the abdomen into the pelvis. A further bad effect is that the waist band of the skirts compresses the trunk at the smallest part of the waist and adds to the ill effects of the pressure of the corset itself.

It has not been our purpose here to discuss the subject of practical methods of dress reform, but *merely to point out the ill consequences of the present* mode. The principles which underlie dress reform are: 1, that the waist shall not be unduly constricted so that the circulation and respiration shall not be impeded. 2, that the trunk shall not be encased in a brace, but that the muscles of the trunk shall be called upon to perform their normal function, which includes the sustaining of the trunk upon the pelvis and legs, and their proper part in the work of respiration, and in assisting in the return circulation of the blood. 3, that the weight of the clothing shall be supported upon the shoulders. These principles are unquestionably sound, and happily, methods of dress based upon them have been so perfected that at the present time women can dress in accordance therewith and not sacrifice either taste or beauty.

*Practical Conclusions.*—My object in presenting this paper is not to offer anything new, but to cover in a systematic way the causes of the diseases of women in order to show their limited character, and that these causes are principally of a preventable character. If I have succeeded in doing this, it follows that if proper attention were paid by the profession to the prevention of the causes which produce the diseases of women that these diseases could be very greatly restricted.

If proper attention were given to growing girls, especially about the time of puberty, and a more normal development of the sexual organs secured, if gonorrhea were more vigorously treated, and if the subjects of that disease were kept under observation until all abnormal discharges were arrested, and proper instruction concerning the abstention from sexual intercourse were given; if antiseptic midwifery were faithfully and efficiently practiced; if lacerations of the cervix and perineum were early repaired, and if full instructions concerning the ill effects of constipation, improper dress and erroneous habits of living were given, the prevalence of the diseases peculiar to women would be very greatly restricted. I believe that this is to be the next great advance in diseases of women. Gynecologists must bring home to the general practitioner the fact that the diseases of women are largely preventable and make him feel his responsibilities, both as to their *production after present methods of practice, and* as to the possibilities of their prevention after improved methods. When the family physician realizes that it lies within his power very largely to prevent disease among the women of the families committed to his care, his sense of moral obligation will spur him on to do his full duty in this matter. When that day comes, the universal prevalence of disease among women will cease to be a reproach to preventive medicine.

DR. HOWARD A. KELLY of Baltimore, congratulated Dr. Noble in bringing such an important subject before the Section in a new way. He had given the subject of preventive disease in women much thought, and believed a *book could well be written upon it. In many instances* the cause of imperfect development of the genitals and of the general system was to be traced back of the child to the poorly nourished and ill condition of the mother before and after conception. Gonorrhea in children was not an uncommon first cause of disease in women. Tuberculosis had been found as the cause in one out of five of his operative cases of pelvic inflammation. We can not attribute too much importance to the accidents of labor.

DR. HENRY P. NEWMAN *of Chicago, said that prophylaxis* should have its day, and he believed it would. When we consider such a paper as has been read, we can see how easy it is to institute prophylaxis and thus prevent a very large per cent. of prevalent diseases among women.

DR. E. P. DAVIS of Philadelphia, said among the most intractable diseases of women was that of neuralgia—neuralgias not only dependent upon mal-nutrition or anemia, but especially those of the pelvic viscera as seen by the obstetrician and gynecologist. Methods of dress reform, the avoidance of constipation during the pregnant condition, as mentioned in the paper, would prevent a certain number of cases of severe pelvic neuralgia, notably those of the sciatic type.

DR. JOSEPH PRICE of Philadelphia, had found vaginitis in infancy not an uncommon cause. Gonorrhea was now a frequent source of pelvic inflammation. In alluding to menstrual disorders, he was satisfied many of them began in infancy. The general attention of the profession to vulvular and vaginal discharges of infancy was neglected. Referring to the favorable statistics of some lying-in institutions regarding the mortality from puerperal sepsis, he said they did include the mortality from other causes. In an institution with which he was connected, not a child had been lost among 1,300 births.

DR. C. R. REED of Middleport, Ohio, thought that an infantile uterus was probably one of the most important causes of illness and feebleness in the women of our country; that deranged or vicious menstruation grew out of imperfectly developed sexual organs. The most difficult cases he had to manage and which gave him the least satisfaction and benefit to the patient, were in those young women who had undeveloped uteri and ovaries. The doctor made a mistake in telling the mother it would be all right after marriage; for unless measures were taken for better development, the marriage would be sterile—the patient would suffer.

DR. J. HENRY CARSTENS of Detroit, Mich., *did not believe* that gonorrhea was so common a cause of pelvic inflammation as some practitioners. He thought a more frequent cause for the troubles in some women was the vicious habit of producing abortion, resulting in chronic inflammation of the uterus, and was a cause of more pelvic inflammation than all of the other causes put together. The profession should endeavor to prevent the vicious habit of women producing abortion with dirty darning needles, etc.

DR J. W. HOFF *of Pomeroy, Ohio, desired to enter his* protest against the statement of so many girls having had gonorrhea. He had practiced for forty-seven years, and had not seen half a dozen cases in daughters. Perhaps it was not so common as it had been represented in Philadelphia.

DR. JOSEPH HOFFMAN of Philadelphia, directed attention to affections of the bladder incidental to parturition and to the puerperal state, brought on by constipation and dislocation of the uterus, etc. Of all the troubles women were heir to, chronic cystitis was the one with which they are most frequently affected. He thought that many of the troubles with which women are afflicted, such as displacements, retroflexions, subinvolution, etc., could be avoided by insisting that the patient remain in bed for two weeks after child-bearing. As to the occurrence of gonorrhea in children, he had rarely seen it. He had often found tuberculosis in the pelvis, and he believed it frequently followed pus collections, if it was not caused thereby.

Dr. E. H. N. Sell of New York city, had seen gonorrhea in children, and even in a minister's family from a supposed moral country district. He would not mention the State. In one case the disease extended so as to involve both bladder and kidney.

Dr. Lewis S. McMurtry of Louisville, Ky., said it had been demonstrated by modern pelvic surgeons beyond question, that the physician in his efforts to relieve functional disorders of the pelvic organs in women very often unnecessarily inflicts upon them a disease of far more gravity than the one to which his treatment is directed. To illustrate: There is not an operator present who has not seen intrapelvic inflammation result from forcible dilatation of the cervix. He is also perfectly satisfied that serious tubo-ovarian diseases are the result of the routine use of caustics upon the cervix—a practice still in vogue by some practitioners.

Dr. Noble, in closing, said he felt satisfied he had met with tuberculosis in several of his cases, as mentioned by the preceding speakers, although no microscopical examinations had been made. With reference to the relation of imperfect development of the uterus to the accidents of labor, he does not wish to be understood as saying that all lacerations of the cervix are due to this condition. In many cases they are due to bad obstetrics. The cause of a good deal of mischief is a very large baby coming through a small pelvis.

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# A FEW POINTS OF INTEREST TO THE FAMILY PHYSICIAN.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY JOSEPH EASTMAN, M.D., LL.D.

INDIANAPOLIS, IND.

It is more or less presumptuous for a specialist to attempt to teach the general practitioner for two reasons: First, a large per cent. of general practitioners are capable of furnishing more pointers to the specialist that he could use in his business than the specialist could furnish to the general practitioner. Secondly, so many epistles have come from gynecological apostles in the past few years intended for the edification and education of the general practitioner that the man who makes his living by doing family practice is beginning to seriously reflect upon what relation he bears to the specialist.

Had I not for fifteen years been actively engaged in general surgery and medicine, nothing could have induced me to place my foot in this field which is actually suffering from intense cultivation, but now that specialists in gynecic surgery are starting up in almost every county seat I think it might be well to "tap the wheels" and elicit, if possible, the ring of solid metal or perchance the dull sound which indicates a crack in the wheel of our rapidly moving train.

Those of us who have opened the abdominal cavity many hundred times and tested our asepsis in the great lymph sac have picked up many little points pertaining to aseptic and antiseptic precautions of much value to the general practitioner. He has, however, often been led to believe that there are two separate and distinct factions; the one contending for and the other against antiseptics. There are no differences. "All are but parts of one stupendous whole." Therefore he has the right to throw the blame on the cœliotomist for his having committed a sin of omission, not using enough soap and water; or a sin of commission, having depended too exclusively on his bichloride solution and failed to scrub (sterilize) his hands, and even poisoned his patient with the deadly drug. The greater our experience and the more marked our success, the keener we should feel the weight of responsibility resting on us for what we teach. Reckless expressions as to methods of operating, treatment of cases, or results obtained are most reprehensible, even criminal, for in this way lives are sacrificed.

The student of human nature and the earnest seeker after truth can see the motives of those who insist that any kind of water is as good in surgical cleanliness as that which has been sterilized, or teach in their published statements and attempt to prove by their success that private hospitals are useless; that the same success can be obtained in the filth hovels of the city; that nurses who have had a large experience in supplementing the efforts of the abdominal surgeon with their wisdom obtained by observation are no better than such nurses as one can pick up. What is the difference, if in the use of chemical agents which destroy microörganisms, we advance a step farther and say prevention is better than cure; or that the prevention of fermentation—"sterilization," "asepsis," "clean surgery" are better than allowing fermentation and putrefaction to swarm with microbes, and then seek to kill them with chemic agents?

There is no difference in the ultimate aim of those contending for antiseptic surgery, and those who claim to be content with clean surgery, for the reason that cleanliness can not be secured and maintained without the aid of chemic agents of some kind. No wonder some of our surgical friends get blinded in the technique of antiseptic surgery. While wandering in their blindness they forget the principles enunciated by the great masters like Lister and Keith. These men proved by scientific research that all fermentation is molecular life. What use would there be in the sterilization of every instrument used in the pelvic abscess if we forget that pus cavities, after being exposed to the air, become a hot-bed for the production of germ life through fermentation and putrefaction? Of what use would all the antiseptic dressing over an abscess be, as compared with perfect drainage—that precious safeguard against absorption? Our apostles of clean surgery are exceeding careful as to who clean their sponges; do not allow any decaying organic substance in their private hospitals, knowing that no sooner does one decaying substance die than it begins to live again in molecular germ life, the prolific offspring of fermentation and putrefaction. Clean surgery is what we want. How shall we obtain it? By water? No; it can not be thus secured. Suppose one of these gentlemen drops blood, pus or serum on his clothing, or gravy on the lapel of his coat. Will water remove it? No; try soap, ammonia, ether, benzine. Ah, it takes chemicals to secure cleanliness. The difference between those favoring and those opposed to antiseptics is largely imaginary, a play on words. We can get it but not without the aid of chemicals. By this, I do not mean such agents as are usually considered germicides. I doubt the propriety of killing germs lest we irritate the tissues. These pretended differences between sepsis and antisepsis can but confuse the average general practitioner or the beginner in surgery. For example: My friend who had located in the far west and had been doing some surgery, returned to make his friends a visit; found his way up to my operating room and was noticing our preparations for work. As I had once been his teacher I began answering his questions by explaining to him that the hands were the most frequent source of conveying septic material into the peritoneal cavity, and that for the past ten years I had been studying how to clean my hands; that now I had a soap made by a chemist, with olive oil and caustic potash, practically the green soap of the pharmacopœia. I showed him my scrub brush for the hands which is boiled every time after being used and then kept in alcohol and ready for use again.

I explained how it takes repeated rinsings to get rid of the soap suds from the pores of the skin before we place the hands within the abdomen. He answered me, "I have no use for all your details. I simply put my hands in the solution of bichloride of mercury and then I know that I am safe." I attempted to reason with him, stating that if I used a germicide for the hands it would be aqua ammonia, which would not only bring tears to the eyes commensurate to the solemnity of the occasion, but would penetrate deeply into the pores of the skin chasing the microbe home, and by its extreme alkalinity, if not killing him outright, weakening him until he would be comparatively harmless. Whereas, his bichloride of mercury by its astringency, would close the pores of the skin, thereby shutting the door after the microbe which it had frightened into its den. This doctor believed that there were two factions and had chosen the chemic side of the question.

I read in a medical journal an article by one evidently willing to teach the average doctor. In this article he describes the bleaching method much used in the Johns Hopkins hospital and other places. He says: "Making the hands brown in a solution of permanganate of potash, then immersing them in a solution of oxalic acid until the color of the potash is removed; the hands will be of a pink color." Here it is that "a little knowledge is a dangerous thing." The pink color is evidence that the acid is retained deeply in the pores of the skin of the hands, even after repeated rinsings under a stream of running water. Such hands put into the peritoneal cavity would be dangerous. Aqua ammonia applied freely will prove the presence of acid by making as much lather as could be made with a good article of soap. This repeated a few times the pink color is gone and the hands are anemic. This alternate flushing and shrinkage of the capillaries, making the pink color, no doubt helps to sterilize the hands. It could be as well done by alternately immersing the hands in cold and hot water.

Another friend asks me to meet him in consultation, his patient having been confined a few weeks before. He fears peritonitis and yet thinks it not possible, as the temperature has not been above 101, though the pulse is 140, wirey and feeble. The abdomen is badly distended. The pulse, the tongue and the countenance all point to septic peritonitis and death. Following the doctor I made a careful examination of the case. I asked for some soap and water to wash my hands. They furnished a piece of soap which had probably been selected, not because of its known composition, but because of its recommendation in the newspapers, including a certificate from a Brooklyn minister. The water given me was hard, containing much lime, magnesia, etc. I whispered to my friend that I could not remove septic germs from my hands with such material. He immediately brought his satchel, and after handling nearly everything in it gave me some tablets of bichloride of mercury to put in the water, and thereby to increase the chemical composition of the water and render it more worthless in cleansing hands.

After handling everything in his satchel he washed his hands in a solution of bichloride. Now, had he carried a hand brush boiled every time it had been in doubtful use, a vial of aqua ammonia to soften the water and a piece of soap made of olive oil and caustic potash, imitating the time honored soft soap of his grandmother, his armamentarium for sterilizing hands would have been nearer to my notion. There is something in soap. I ask the man in the alley back of my stable what he is going to do with the putrefactive, maggotty carcass of a dead dog he has laid in his cart. His answer was that he hauled them to the soap factory. I repeat there is something in soap. I insist there was a good deal in that soap. The nearer we stick to the religion and soap of our grandmothers the nearer we will approach moral and physical cleanliness of body and mind.

This good doctor was deceived as to the disease by too implicit reliance in his thermometer. I have many times seen a patient with septic peritonitis lie down and die, while I have never known a pulse to deceive me. We had in the profession more good pulse feelers before we had so many thermometers.

I get into my friend's buggy to ride home. He buttons up two coats, strokes down his long full beard, with hands and sleeves teeming, as I believe, with germs of septic peritonitis, then puts on a heavy pair of warm driving gloves which had done him service two winters,—surely nothing but fire could ever sterilize them. Five days later my good friend rushed into my operating room as we were getting ready for an abdominal section waving these same driving gloves in his hands. I asked him to retire. He did so, but remarked that he had changed his clothes.

This doctor's antiseptic precautions were faulty because of too implicit reliance in germicides which led him to overlook the fact that any microbe, having a particle of self-respect, would not attempt to stay where soft water, clean scrub brushes, plenty of elbow grease and repeated changes of clothing were customary.

The doctor's change of clothes was not satisfactory to me, so long as the gloves were used into which he had placed his hands after examining the case of puerperal septicemia. It requires the utmost painstaking to have our chain of antiseptic precautions strong in its entirety. "No chain is stronger than its weakest link." In studying septic precautions and applying the principles in our practice we often strain at a gnat and swallow a camel. This being true of those who are specially engaged in intraperitoneal work so that the least deviation from the strictest asepsis will be detected in the results obtained, how much more likely is he who is engaged in general work to overlook some important detail in the change of clothing, and especially in what he is handling with his hands, including the gloves.

It was taught in former years that the obstetrician should stop practice after attending a case of epidemic child-bed fever.

These cases we now believe to have been puerperal septicemia, and despite my unbounded confidence in soft water, soft soap, scrub brush, ammonia, turpentine and alcohol, I am of opinion that no man is warranted in opening the abdominal cavity or attending an obstetric case within five days after his hands have been in contact with a case of septic peritonitis, if that peritonitis is at all in any possibility during its acute stage; and not even after the expiration of five days unless in this space of time there shall have been repeated changes of clothing, daily scrubbing of the hands and arms with soft soap, soft water, with ammonia poured into the brush and the hands immersed in turpentine afterwards. In this purification the hair and beard should receive due attention.

This statement may be challenged by those who make abdominal sections in cases of pus tubes, but I must draw the line between cases of sub-acute and acute septic peritonitis whether the same be puerperal or not. In a recent conversation with Dudley of Chicago, I find that this conscientious man has been thinking in the same line and arrived at the same conclusions as myself in this regard. Have we not erred in publishing to the general practitioner what numerous lives we could save by abdominal surgery? Would it not be better to give him the benefit of our experience and some of the details of our aseptic precautions, and thereby enable him to avert the probability of carrying the death warrant of his patients in the hair follicles on his hands, under the finger nails and in the gloves? Is it not time that we quit contending that there are two factions in antiseptic surgery, one depending on water, the other on chemicals? Inasmuch as chemicals are useless without water and water without chemicals, even a soap of known chemical composition, the systematic combination of the two in the proper way of their use upon the hands is what the average physician needs to know. The man who is daily dealing with the peritoneal cavity has a store of knowledge of great utility to the general practitioner. And yet we must forget self and publish only that which we have proven to be right and safe, like Dr. Kelley who discarded the *American Journal of Obstetrics* when he found that his bleaching solution of potash would not kill bactêria in a skein of silk.

I meet my friend in consultation. He had told me to bring all kinds of probes to get entrance into the cervical canal as he had failed to find an entrance into the uterus, notwithstanding he had used the speculum many times. I found the uterus crowded up behind the pubes by an ovarian cyst as large as a water bucket which the doctor had not detected; secured the consent of the patient and set the day to remove the cyst. As we were about to leave, the doctor asked if I had not better use the speculum to see if we could not pass a sound. I replied that fingers were made before forks, speculums or sounds and that conjoined manipulation gave so much information that sounds were going out of use. A very large majority of practitioners I meet are capable diagnosticians. A few are sadly deficient in physical diagnosis of abdominal disease. It is often a lack of persistence in abdominal palpation and determination to master the subject. They have not the art of moving the fingers over the viscera carrying the skin with fingers. And sometimes they do not even obtain a knowledge as to whether the tumor grew from above downwards or from below upwards. If from above downwards, can it be manipulated back, as in floating kidney, or moved from side to side, not upward, as in distended gall bladder. They do not understand that palpation of an ovarian cyst should give signs of fluctuation, and a fibroid of a solid; that in both there would be dullness on percussion. Whereas, in ascites there would be resonance. I mention these points because there is some danger of inspection, palpation, auscultation and percussion becoming a lost art. There are so many anxious to make exploratory abdominal section.

One of the ablest practitioners of my State calls me in consultation. His telegram suggests that I come prepared to make an abdominal section. The case is a boy and he has been suffering three days from inflammation with excruciating pain in the region of the vermiform appendix. The doctor has made postmortem examination, finding a gangrenous vermiform appendix, and from his knowledge gained by this postmortem and by his reading the current literature of the day, especially the teaching of Morris of New York, that all cases of appendicitis should be operated upon, believed that success would follow and life be saved if we only operated early enough. I, having seen a few operations followed by death because the inflammation was yet in an acute stage, that is to say while the circumscribed septic peritonitis, which sometimes accompanies cæcitis and appendicitis was acute not sub-acute, believed that an operation would surely be followed by death, and that if by opiates we could arrest the progress of inflammation and seize the opportunity in the interval of the attack, operative interference might do some good. Knowing also that some of these cases make fairly good recoveries without operation I declined to operate. Neither the doctor nor myself were satisfied with the results in this case, and this subject is of such vital interest to the general practitioner that I quote from a recent article by Dr. Schaefer as being in point: "It has been asserted by McBurney of New York, that 90 per cent. of all cases called perityphlitis are really cases of appendicitis, and this statement seems to have been almost universally accepted by the profession of our country, for the term perityphlitis has been almost entirely dropped from the textbooks and the writings of most surgeons, and appendicitis adopted as a substitute. This change of terms has been accepted with too great haste in our judgment and is in all probability one of the chief causes which lead to the great differences of opinion relative to the question of operating; for we shall find upon searching the literature of this subject that various conditions may be and in all probability are described under the term 'appendicitis.' I am led to believe through my experience that a larger percentage of cases of so-called appendicitis than we are aware of are inaccurately diagnosed. This, of course, will be difficult to prove, but when we look at the facts produced by practical experience, enough presumptive evidence can be brought forward to indicate that the assertion is not without foundation. How do we arrive at the facts concerning the statistics of appendicitis? 1, by noting operation. 2, by recording results of autopsies. But is it not reasonable to suppose that the greatest source for statistics for lesser diseases of the caput coli is lost in the fact that they recover (it is claimed by Treves that 90 per cent. of all cases get well spontaneously) so that no autopsies are made? I feel convinced that a simple catarrhal cæcitis with an accumulation of fecal matter, is mistaken for appendicitis much more frequently than is generally conjectured, having had at least five cases of this kind recently myself which recovered. In each, after the acute symptoms were subdued, repeated colonic flushing brought away large quantities of dry, lumpy, fecal matter and the tumor vanished. In considering this subject we are at once confronted by two problems: 1, diagnosis. 2, the question of operation. In perusing the literature of perityphlitis and appendicitis which during the past few years has become extraordinarily voluminous, one is struck with the fact that most writers and operators take a radical stand for or against operative procedure, and those who favor operating are again divided upon the issue of 'early or late' operations. It seems strange to the casual reader that minds experienced in the same line of work should differ to so great an extent in considering questions of so practical a nature. There is an old axiom, 'whenever pus is discovered let it out if possible.' That the indications for the evacuation of pus in this instance are of greater import than in any other conditions or locations no one will dispute. What, then, causes the hesitation? 1, the difficulty lies in finding the pus. 2, the great danger to the peritoneum and its sequelæ. The first difficulty the surgeon will always be confronted with in a proportion of the cases. The second difficulty will be more and ignored as we become more familiar with the work, and more perfect in antiseptic surgery."

Here is common ground where a wise general practitioner with large experience and much reading meets the specialist, both determined to do the very best thing for the patient, and yet they can not see alike.

Between the general practitioner and the specialist; the one looks at the thing in a general way and the other in a special way. They are both instructed by association together over a given case. The ideas of the specialist are widened. The ideas of the general practitioner are narrowed to a closer study as to the particular stage of the disease suitable for operative interference; and ultimately we shall, as I believe, unite in a mutual faith that when to operate is a vital question requiring much skill and surgical wisdom to answer, and even then we will sometimes find that our best judgment and conscientious actions have failed to save a life. I believe that the specialist should concede much to the experience and judgment of the general practitioner. What success I have had is in a measure due to association with successful, intelligent, general practitioners. I believe the specialist should be as a hand maid to the family physician, by no means supplanting her mistress nor yet usurping her rights but always assisting her to maintain them.

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# THE RIGID OS AS A COMPLICATION IN LABOR.

Read before the Section of Obstetrics and Diseases of Women, at the Forty-fourth Annual Meeting of the American Medical Association.

BY E. H. KING, M.D.
MUSCATINE, IOWA.

One of the most frequent complications which occurs to annoy the obstetrician, protract labor and exhaust the patience and endurance of the parturient, is a rigid and unyielding os.

This term is applied in a general way to a variety of conditions, materially differing from each other; but possessing this feature in common—the cervical tissues are unyielding, and the os undilatable.

This may depend upon non-development in the early primipara; upon fibrous degeneration in the old; upon cicatricial induration, consequent to previous lacerations, and upon pathological change, incident to carcinomatous disease.

But we frequently find a persistent rigidity where none of these conditions are present; wherein the lower uterine segment is apparently fully developed, and normal in character, thin and soft when quiescent, but upon the advent of each uterine contraction the encircling tissues spasmodically contract and become rigid and unyielding. More or less sensitiveness and irritability of the cervical tissues are present, and occasionally we find an acute hyperæsthetic sensitiveness of the whole vagina, sometimes accompanied by local heat and dryness. The patient is restless, nervous, irritable and depressed, is annoyed by examinations, suffers severely at each recurrence of uterine effort, and persistently demands relief from the attendant.

Again, we may find the encircling tissues to be a thick muscular band, insensitive and rigid.

The patient may be in good health; presentation, position, the relative size of the child to the maternal pelvis, uterine contractions and personal effort may be all that could be desired, yet, whenever these rigid conditions persist labor will be correspondingly protracted, the patient subjected to increased and unnecessary pain and distress and liable to suffer from injurious sequelæ.

The most serious, but fortunately the least frequent result to be apprehended is rupture of the body of the uterus, allowing its contents to escape into the abdominal cavity. More frequently has there been a complete separation of the cervical rim, and quite frequently, or rather perhaps, the usual result is more or less laceration of the cervix, giving rise to hemorrhage and laying the foundation for future pathological and gynecological conditions, which afford a fertile field for the specialist to cultivate, often to his own financial rather than to his patient's physical improvement. Unaided, after long continued and vigorous efforts, the minor tissues around the os may tire out and give way to slow dilatation; but more frequently the sudden rupture or laceration, previously noted, may occur, and labor be advanced towards completion. Then, too, long continued pressure against the cervical rim, especially in the absence of the protecting bag of waters, is liable to cause contusion with subsequent necrosis, which will add another factor towards future pathological complications, and trouble and ill health for the patient.

In cases wherein structural change has occurred from carcinomatous deposit, surgical interference is beyond doubt the proper method of relief; making lateral or bi-lateral incisions through the diseased tissues and keeping the patient sufficiently anæsthetized to prevent undue suffering until delivery is accomplished. Incision is also proper in cases of non-development, and in fibroid degeneration after failure to obtain dilatation by milder means.

In cases of irritable, spasmodic or of muscular rigidity, various methods and remedies have been employed. Blood letting to faintness is an old remedy and often effective; but bleeding is not fashionable at the present day, and the average practitioner does not possess the necessary moral courage to revive the practice. The relaxing effect of the hot bath, recumbent or sitz, has been used with benefit, but is often inconvenient or impossible to give in general practice. Ipecac, tartar emetic, lobelia, tobacco and other emetics have been given ad nauseum with more or less effect, but more often to the doctor's disappointment, and the patient's disgust.

Digital and instrumental dilatation has its advocates, but is objected to by those who live in mortal dread of any such interference, on the score of the danger from septic infection. Chloral hydrate is often used but is perhaps of more value to relieve the excessive irritability and procure rest than to effect immediate dilatation, and the same may be said of opiates in their various forms.

Undoubtedly the most popular remedy of recent times is anæsthesia pushed to a degree of complete relaxation. It is often efficient, and as it relieves the patient from the agony, it is hailed with delight by the sufferer and ever after held as a boon of inestimable value. But anæsthesia will sometimes fail and organic disease or personal prejudice may preclude its use.

I have the pleasure to offer another remedy, not to my knowledge generally used by the profession for this purpose, viz., atropia used hypodermatically. So far as I am aware, it was first used for this purpose by the late Dr. A. Ady of West Liberty, Iowa. Although belladonna, extract and ointment has been applied to the cervix for this purpose from time immemorial, Dr. Ady has used atropia for many years in his practice, and he states "that it will as certainly dilate the os, as it will the iris," and in the cases wherein I have used it, I can fully concur in the statement. I believe it to be the most prompt and efficient remedy we possess to inhibit the contractility of the circular fibers of the cervix, thereby favoring prompt dilatation and thus accelerating labor. 1-100 gr. will generally be sufficient. Its effects will be manifest in from fifteen to twenty minutes. Rarely will a second dose be necessary.

The only unpleasant symptom attending its use is the dryness of the mouth and fauces and dilatation of the pupils. Neither in Dr. Ady's experience or in my own has it seemed to favor hemorrhage or interfered with postpartum contractility of the uterus or with lactation.

Possibly, delirious excitement may be caused by it in persons peculiarly susceptible to such an effect of the drug, but such cases must be extremely rare.

I therefore briefly present this remedy to the profession that it may be given a thorough and satisfactory trial, and its true value be determined.

## EPITHELIOMA OF THE TONGUE, AND ITS TREATMENT.

[Abstract of a paper read in the Surgical Section of Pan-American Medical Congress.]

BY L. C. LANE, A.M., M.D. (BEROL) M.R.C.S. ENG.
PROF. IN THE COOPER MEDICAL COLLEGE, SAN FRANCISCO, CAL.

The author of this paper accepts the view of those observers who assert that epithelioma is the only form of malignant neoplasm which attacks the tongue, except such as may have reached that organ after primary invasion of contiguous structures.

Epithelioma has its origin deep in the epithelial elements and, according to its site, may be divided into two classes—the excrescent, and the internal or interstitial. Each form may arise from a papilla, wart, naevus or limited abrasion. In the excrescent variety the growth is outward, tuberculated or wart-like prominences being isolated or forced into an uplifted plateau. The penetrating species commences usually on the side of the tongue, the newly formed elements crowding upon and destroying as they invade, the deeper structures, finally reaching and opening blood vessels of more or less magnitude. These metastatic processes are continued until the affection has no definite bounds.

The causation of epithelial cancer of the tongue is unknown, but certain agencies might be cited as promoting its evolution, such as calcareous incrustations on the inner side of the teeth, sharp points or edges of the teeth which continue to wound the borders of the tongue, and the habit of thrusting the tongue into an interstice between the teeth. The use of tobacco is probably a causal agency, the disease being far more frequent in men than in women. Epithelioma of the tongue seldom appears before the fortieth year of age. When allowed to run its course lingual cancer completes its fatal work within fourteen months. Operative interference does not offer encouraging prospects because so frequently undertaken late in the progress of the growth. Probably as high as 75 per cent. of the cases might be saved if the disease were seen in the primary stage and treated upon surgical bases, but meddlesome ignorance too often monopolizes the precious time during which the patient might be saved. The absence of metastatic glandular infection may be regarded as the only test of safety. When intelligent management has stepped in and prolonged life, two years is usually the limit of time, before death ensues.

The author's paper considers at length the gross pathology, diagnosis and surgical treatment of lingual epitheliomatous growths and contains ample bibliographical research with citation of cases.

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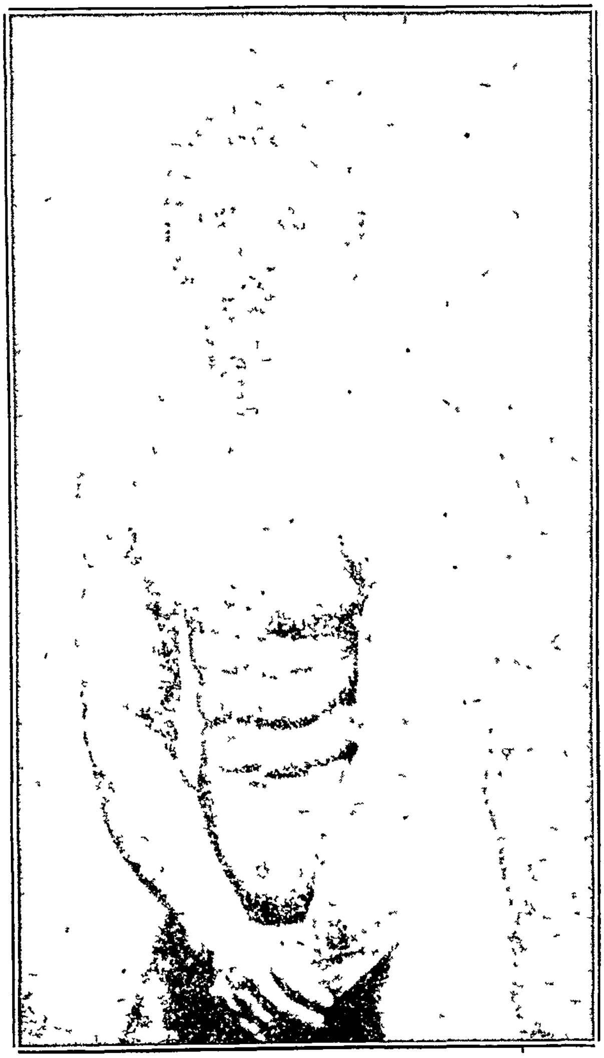
## MUSCLE BUILDING AS ILLUSTRATED BY THE MODERN SAMSON, SANDOW.

BY G. FRANK LYDSTON, M.D.
PROFESSOR OF THE SURGICAL DISEASES OF THE GENITO-URINARY ORGANS AND SYPHILOLOGY, CHICAGO COLLEGE OF PHYSICIANS AND SURGEONS; ATTENDING SURGEON, COOK COUNTY HOSPITAL

It has frequently been remarked that men of the present day are not so strong as those of times past, and there are many reasons for this assertion. An inspection of ancient armor is sufficient to convince one of the truth of this statement. In looking at specimens of ancient armor, we are at once impressed with their great weight and comparatively small size.

It would distress John L. Sullivan, I have no doubt, to force himself into one of the largest suits of armor that have thus far been exhibited. Once he had succeeded in arraying himself in the suit, he would doubtless feel more like reposing peacefully upon the ground than vaulting into a saddle and running a tilt in a tourney. One thing is certain, viz: that the soldier of ancient times although by no means a Sullivan in physique, could put the average modern athlete to the blush in point of strength and physical endurance. It is obvious that the men of former days must have made up in the quality of their muscular fiber what they lacked in bulk.

Of all the living modern examples of muscular possibilities Sandow is probably the finest specimen.



This man shows in a very marked degree the wonderful results which can be obtained by a systematic and philosophical method of muscle building. Sandow is by no means a large man, being but 5 feet 8½ inches in height. To see him arrayed in evening dress, the uninitiated would hardly believe the tales of physical prowess which can be told of Sandow. Sandow was born in Prussia, and is now 26 years of age. He weighs—stripped to the buff—186 pounds. The measurements which he claims are: Chest, 46 inches; waist, 29 inches; biceps, 19¼ inches; thigh, 27 inches; forearm, 19 inches; calf, 17½ inches; under axilla and over deltoid, 17 inches: under axilla and over the shoulder, 21 inches. The maximum chest expansion is said to be 14 inches.

I have not had the opportunity of verifying these measurements and am inclined to believe that they are somewhat exaggerated. Especially am I inclined to doubt the chest expansion, which although simply wonderful would, I think, show somewhat differently from the published estimates.

To the student of anatomy Sandow is an object lesson worthy of study; a more beautiful demonstration of the superficial and more important muscles than this man presents could hardly be imagined. This demonstration is made possible by the perfect control which Sandow possesses over even those muscles which, however excellent the natural development of the individual, are never under very perfect volitional control in the average subject. In an experience and observation of physical training and its results, extending over a period of twenty years, the writer has never seen an athlete who has attained a degree of perfection in this respect which could be compared with that attained by Sandow. A glance at the pictures which have been reproduced from the photographs which Mr. Sandow kindly presented me, will well illustrate some of the points in his development which are most noteworthy. It has often been said by scientific iconoclasts, that ancient painting and sculpture is very unreliable in anatomical details. Especial stress has been laid upon the "checkerboard" appearance of the abdomen seen in various heroic works of art by the old masters, as an illustration of this defect. If the reader will glance at the front view of Sandow, he will observe a division of the abdomen into rectangular areas of muscular eminences which are more prominent than those of any painting or statue with which I am familiar. This extraordinary development of the recti is, however, by no means disproportionate to the development of the other muscles of this remarkable man. On inspecting the back, as seen in the cut, a clear, distinct outline of the various muscles is observed. Attention is especially directed to the scapular muscles and the trapezii. The muscles of the limbs are equally well developed. The pectorals and that usually poorly developed muscle, the *serratus magnus*, are of phenomenal development.

When at rest, Sandow's muscles and skin are soft and pliable, but when the muscles are contracted from voluntary effort, it is wellnigh impossible to pinch up the superlying tissues.

It is a striking fact that Sandow belongs to a family no other member of which was ever noted for great strength; or, even a taste for athletics. Sandow himself, until he was 18 years of age, was of rather frail build. At that age he began a systematic course of training by a method peculiarly his own. His system consisted essentially in the acquirement of perfect voluntary control over the various groups of muscles, and where possible of single muscles By thus specializing he was enabled to localize his muscle building where it appeared to him to be most needed. Having acquired a fair degree of development and control of the group selected, he then devoted his attention to another, and so on until he had succeeded in acquiring the foundation of the remarkable general development which he now presents. According to Sandow, the only apparatus used in his preliminary training was a pair of five pound dumb bells. It was not until he had attained an approximately perfect general development that he began those wonderful feats of strength which are now his daily avocation. To those who have not seen him at work, Sandow's exploits sound like a fairy tale. He plays with fifty-six pound dumb bells as though they were marbles, and with eyes blindfolded, his feet tied together and one of these heavy bells in each hand, turns a back somersault as gracefully as could any empty-handed gymnast. After this preliminary warming up, a huge dumb bell, each end of which is formed by a hollow globe containing a man, is brought in, and our modern Hercules gracefully lifts it from the floor and pushes it straight up with one hand at full arm's length above his head with apparent ease, letting his burden down again without shaking up his living dumb bell to any great extent. The weight of this bell and its contents is 305 pounds.

A still more wonderful feat is his exhibition on the Roman column. Strapping his feet to an iron upright at some distance above the floor, he supports his weight by a couple of straps attached to his knees. Leaning down backward from his horizontally extended position he then picks up two men, one after the other, and places them upon his knees. The strain upon the back, thighs and arms in this feat can be readily imagined. As a climax for his exhibition Sandow next supports a platform upon his chest and knees while resting upon his feet and hands, and upon this platform three trained horses are balanced. The combined weight of the platform and horses is about 2,800 pounds.

Much curiosity has been exhibited regarding Sandow's system of training, especially as regards his diet and mode of life. It is noteworthy that he eats, drinks and smokes about as he pleases, the old fashioned idea of dietetic restriction for athletes evidently having very little weight with him. It is astonishing that he is not compelled to be more abstemious, but he is apparently quite as capable of immense muscular effort after a course dinner and a liberal supply of wine, followed by one or more cigars, as at any other time. After his performance is ended Sandow takes a cold sponge bath and a rub, as does every well informed athlete.

According to Sandow, ten minutes exercise with five pound bells night and morning is all that is necessary to attain a superb muscular development. In proof of this, he exhibits a pupil in whom three months training has produced marvelous results.

Irrespective of my own opinion regarding the disastrous effects of such severe strains as those imposed by Sandow upon himself, I am compelled to confess that I have rarely examined so perfect a type of good health as this man presents.

A heart perfectly normal in size and action, and lungs free from emphysema, are hardly to be expected in one whose daily work comprises such a series of severe muscular strains as those to which Sandow subjects himself, yet these organs are apparently sound. The heart is not disproportionately developed and its action is perfectly normal. Even under severe strain the respiration and heart's action are but little disturbed. I found that the respiratory movements numbered 20 per minute and the pulse 80 before our subject went upon the stage. On examination about half an hour after the regular performance—during which time Sandow occupied himself in displaying his muscular development to a select audience in his dressing room,—the pulse was 90 and the respiration 20. It is worthy of remark that he had partaken of a hearty meal with a liberal supply of champagne shortly before the performance and had been smoking freely during the evening. The average athlete would hardly dare to go through such preliminaries even when ordinary feats were to be attempted. By far the most interesting feature in Sandow's work is his method of muscle building. He begins as already remarked, by cultivating volitional control over the several muscular groups. This is especially interesting to me as it is precisely the same system that I have advocated in several articles upon physical training, and is essentially the same as that which I put in practice in gymnastic classes some years ago. The principle involved in proper muscular training is exemplified by those individuals who by practice are enabled to acquire great volitional control over such muscles as the auricular and occipito frontalis. As is well known, the platysma myoides is poorly developed in the human subject, being but a remnant of the panniculus carnosus. It will be found that it is possible to acquire a marked degree of development and control of this thin and unimportant sheet of muscular fibers. If this can be accomplished in such muscles as those mentioned, it is certainly reasonable to suppose that more perfect results can be accomplished in the case of the more important muscular groups. By systematic practice in this direction one is enabled to get sufficient exercise without any apparatus whatever. It is the relative degree of control which the individual acquires over his various muscles, rather than their bulk, that determines their strength. Such enormous development as that of Sandow, is by no means necessary nor even advisable. Feats of strength do not constitute the aim of ideal athletics, i.e., athletics for health. Given a bulky muscle, and we usually have a slow muscle. The ideal muscle is not always the one which stands out in such bold relief as do those of Sandow. The average big muscled man is muscle bound, and perhaps shoulder bound, and while Sandow is apparently an exception to the rule, he himself in all probability displays to less advantage in feats requiring a combination of skill, strength and agility. The question is often asked of Sandow, "what could you accomplish in pugilism?" Sandow replies and quite justifiably that he would not dare strike a man; that he can break a four inch plank with a blow of his fist, etc., but the ability to kill a man with a blow of the fist is not pugilism, and striking a plank is vastly different from striking an active skilful boxer, who is not in duty bound to stand still and be struck. Very few boxers are ever able to exercise their utmost strength in striking a blow. To put a blow accurately and quickly in upon an object in motion, is vastly different from striking a sandbag. Especially is this true when the danger to one's self is proportionate to the violence of the attempt made in striking an opponent in case a counter blow is received. Experience has shown that bulky muscled men are, on the average, failures as pugilists and wrestlers. Corbett is an ideal athlete, yet his muscles are smooth, well laid and not bulky. It is to be hoped that Sandow's exhibitions may not have a pernicious effect upon aspiring youths who imagine that ideal training implies great feats of strength, and muscles which stand out in bold relief like an anatomical demonstration.

A point worthy of consideration is the fact that Sandow is of a very phlegmatic temperament. Persons of a more sensitive organization, and brain workers, would soon pass the danger line if they attempted to emulate Sandow. The personal equation must be remembered in athletics as well as elsewhere. A word of caution is also necessary in respect to diet and drink. While a restricted regimen is a relic of the past in athletics, more care is necessary than Sandow imposes upon himself—the personal equation again. Wine, tobacco and athletics mix but poorly.

The question now arises: what damage if any, does such work as Sandow's produce upon the individual? From what has been said of Sandow's present condition one might be led to infer that such feats of strength are harmless, but such is not the fact. Sandow is confronted by two dangers. 1st. Death at an early period after complete suspension of his athletic strain. 2nd. Death at middle age or soon thereafter, from a continuance of his work.

In the first instance we will suppose that our subject ceases his work—voluntarily or otherwise. In this event he is confronted by a serious problem. He has solved the problem of developing his heart and lungs *pari passu* with the development of his general muscular system, but how is he going to bring about involution of his lungs and heart *pari passu* with the general muscular involution which must follow rest? To do this is impossible and the result is a relative disease of his enormous heart and lungs. Disuse means decay; degeneracy of cardiac fiber and lung tissue results; degeneracy offers a constant invitation to disease of various kinds. The most powerful pugilist America ever produced, quit the "squared circle" and entered a counting room, only to die of consumption within a year. The athlete had need of large lungs, but large lungs without their accustomed exercise were a misfit in a sedentary occupation.

We must not forget in considering the immediate effects of muscular strain, the possibility of chronic myocarditis. Many a powerful man has paid the penalty of over exertion by the development of so-called heart failure during some acute disease. I recall the case of a professional friend who used to boast that he could eat more, drink more and lift heavier dumb bells than most men, yet this man died of a comparatively slight ailment. Heart failure in this case meant simply a myocarditis from gout and over strain. Some of my readers may recall the "white spot" in the soldier's heart which was recognized as a result of over exertion years before we knew aught of myocarditis.

The probable disastrous effects of a continuance of his work involves degeneracy of the blood vessels. It has been said that "a man is just as old as his arteries." Many a strong man has verified the truth of this to his cost. At 45, Sandow will be in the prime of his strength; his arteries and heart, however, will not be in the prime of their elasticity. Readjustment after strain will be no longer possible. Degeneracy of arterial walls and cardiac fiber will occur; dilatation of the heart and trouble with the coronary and minute cerebral arteries is likely to develop. Apoplexy and aneurism are possibilities. The lungs will lose their elasticity and emphysema will supervene. Verily the athlete's lot will then be by no means a happy one.

Sandow is a wonderful man, but his example is pernicious. His system of muscle building is superb; its application may be dangerous.

In looking at Sandow's enormous muscles I was reminded of a remark made by my old teacher many years ago. Pointing to a cast of an enormously muscular arm upon the wall he said: "Boys, remember that such a biceps is possible, but only at the expense of life; the man from whom that cast was taken died in its acquirement." Truly, a man is not a horse and may not do the work of a horse and live. Athletics for health, should be the motto of the man who trains. Athletics for big muscles and competitive feats of strength and endurance are pernicious, illogical and dangerous. Let the man of spare muscle remember the personal equation and not try to make a Samson of himself. One may not gather figs of thistles. The average man had better content himself with perfect control and excellent nutrition of muscles of even mediocre development than to emulate Sandow. From personal experience I am also inclined to advise against getting into so-called perfect training. Especially would I advise against attempts to become expert general athletes on the part of men who lead sedentary lives or who are brain workers.

The best exercises are those involving more or less skill and active attention; the more like play the better.

A man may use dumb bells and think of the price of wheat; if, however, he is engaged in boxing, wrestling, fencing, base ball, hand ball or tennis, he is apt to pay strict attention to the subject in hand.

Cheerful companionship is essential. When patients ask me what they had best do in the gymnasium, I usually advise them to play boy for an hour and follow the play hour by a bath and a good rub down.

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SATURDAY, SEPTEMBER 16, 1893.

## THE FUTURE GREAT UNIVERSITY.

The meeting of the Pan-American Medical Congress was attended by few, if any, of the unfortunate misunderstandings that so frequently leave unpleasant memories.

No congress, medical or secular, has ever had deeper motives of patriotism for its mainspring. The medical profession of the Western hemisphere were anxious to take the initiative steps in the formation of this new medical union, which means the emancipation of the profession of medicine of this part of the globe from European control.

This great change can not be immediate, but it is sure. The future medical students of Pan-America will attend the universities of the United States, Mexico and South America. Berlin and Paris schools will attract them no more than the older institutions of Padua and Leyden.

The progress of civilization is ever westward. Athens and Alexandria were succeeded by Salernum and Cordova; they in turn by Paris and Edinburgh.

Boston and Baltimore now claim a share in the leadership, closely followed by Philadelphia, New York, Chicago and others.

The medical schools of the cities of the United States have done very much in this Columbian year to place them in the front rank, but the history of the evolution of human intelligence shows that these efforts are only bringing into view the eternal principle mentioned by BISHOP BERKELEY:

> "Westward the course of Empire takes its way."

It is in no spirit of self-glorification that we write this article; but no man can conscientiously compare the technique of the methods of the MASSACHUSETTS GENERAL HOSPITAL, the PENNSYLVANIA HOSPITAL or the JOHNS HOPKINS HOSPITAL, without knowing them to be superior to those of the HOTEL DIEU, the MOABIT or the ALLEGEMEINE KRANKENHAUS. As for the London hospitals, there are none to be mentioned in the same class, except possibly ST. THOMAS, and that is so cramped in its operation and hampered by traditional customs as to resemble more the institutions of the dawn of the century than those of its close.

In the new world, then, we may expect the great university of the next quadri-centennial; and the present status of American medical education as shown in the late Pan-American Medical Congress in its Section on Pedagogy, is such as to warrant the hope that not only will the United States in its turn, for its due season, be the seat of the world's great medical school, but that the time is near at hand.

One may not sufficiently lift the veil obscuring the future to show what American city may have this great honor, but it certainly will not be established in any city where the profession are self-sufficient, where they are already finished to an extent that prevents them from taking part in the professional exercises of Pan-American conventions, or the entertainment of their invited guests. When the profession of a city become so wrapped up in their own affairs as to become oblivious to what is going on about them, the outside world will certainly allow them that peace and quiet which betoken decay and dissolution.

## THE ARMY MEDICAL EXHIBIT AT THE WORLD'S FAIR.

The exhibits of the Medical Department of the United States Army are in charge of Captain LOUIS A. LA GARDE, Assistant Surgeon, U. S. Army. They are contained in a regulation post hospital, of eighteen beds, and in a field hospital adjoining.

*The Regulation Hospital.*—This structure is built of frame and staff. It is divided into a ward and the administration part. The latter has two stories, having four rooms upstairs and five downstairs. In the original plan, the latter furnish rooms for kitchen, dining-room, store-room, dispensary and post surgeon's office. The ward is a large room, 56x24, leading from the main hall of the administration building.

As the exhibition of one or two beds would illustrate the pattern of bed and bedding used in army hospitals, it was not considered advisable to have more than a sample or two of beds in the ward, and the rest of the valuable space in this part of the building is devoted to the display of specimens from the Army Medical Museum and some of the supplies furnished the medical department at every army post. 1, we find the surgical instruments among which we have noticed some aseptic cases from the finest makers; 2, the pouches and first aid dressings carried by the Hospital Corps men in times of war; 3, the chemical and bacteriological sets for the analysis of air and water and soil; an elaborate lay for the use of those officers practiced in matters of theoretical and practical hygiene. 4, a collection of wet and dry preparations illustrating different pathological lesions; 5, models to show the evolution in hospital construction, and transportation of the wounded in war; 6, 300 bromid enlargements and transparencies, illustrating pathological and histological lesions of various kinds; 7, a series of eighty consecutive sections of bone illustrating the form and structure of the osseous tissues: 8, ten series of consecutive sections of human embryos illustrating the anatomy of the various portions of the body; 9, a collection of microscopes showing the evolution of the instrument; 10, a collection of deformed bullets, and lesions of bone, recent and remote, from gunshot injuries, gathered from cases during the war of the rebellion.

These specimens form a great contrast with a collection of sixty specimens of bone in the opposite corner of the room which illustrate the effects on bone of the German silver mantled projectile of 30 caliber. Each specimen here is mounted, with the bullet which inflicted the injury beside it, and the slight deformation of the projectiles and their tendency to perforate the spongy ends of bone—circumstances which add so much to the so-called humane phase of the rifles of small caliber now forming the armament of all foreign nations,—are among the more striking pictures of this important collection. The specimens show the difference in destructive effects between the old leaden bullet of 45 caliber, which our army has used since 1874, and the 30 caliber projectile which we are about to adopt with the Krag-Jorgensen gun. The specimens were prepared by DR. LA GARDE, U. S. Army, at Frankfort arsenal last winter for the exposition. The cadavers were consumed in testing the effects of the projectiles at all the distances between the 100 and 2,000 yard ranges. Those who would wish to see the ravages of the past and future wars on bone should not fail to examine this collection.

The rooms downstairs contain supplies and the records kept by the medical department. Two of the rooms upstairs are thrown into one large room, by sliding doors, which is used as a clinical laboratory for the inspection of practitioners of medicine only. The object of this laboratory is to show a clinical laboratory to a general hospital in time of war. In appointment it was largely patterned after the clinical laboratory of the Johns Hopkins hospital. There are eleven microscopes displayed, by the aid of which pathological, histological and bacteriological specimens are shown. There are a number of thermostats in operation, and the collection of cultures on various media is all that could be desired for the study of bacteriology from the general practitioner's standpoint. DR. E. H. WILSON of the Maryland laboratory is the bacteriologist, and there are two medical officers and subordinates constantly at work.

*The Field Hospital.*—This part of the display is under canvas. It is probably the most elaborate attempt ever made by an army medical department to show the resources of surgery and first aid on the field of battle. It consists: 1, of a wall tent for the medical officer which contains a field desk, folding cot, tables and chairs; 2, a hospital tent in which sick call is held, and where the records and dispensary supplies are kept; 3, two hospital tents pitched end to end to be used as a ward. These contain twelve cots neatly made up with the field linen, bedsacks of straw, blankets, etc. The field furniture for the ward is limited to folding chairs and tables; 4, a hospital tent, called the squad tent for the detachment of the hospital corps on duty, eight in all. These men are drilled twice per week in the methods of rendering first aid and transferring wounded and sick soldiers from litters to ambulances, etc.; 5, shows a wall tent to be used for cooking, the Buzzicot oven and other cooking utensils; 6, a hospital tent to be used as a dining-room in which is shown the folding chairs and folding field dining tables, a food- and mess chest; and 7, a common wall tent containing a bed pan and earth closet. The present field furniture of the medical department has been only recently adopted and it shows the display of much ingenuity and forethought for the care of the sick.

## BIOLOGICAL PROBLEMS OF DEATH.

In some of the recent German reviews this topic has been discussed at some length. Death is called a definite arrest and change of life. This can only occur among multicellular beings, and is not found among unicellular organisms. These latter increase by fusion, growing to a certain stage, then dividing into two parts alike in size and structure. These organisms may be called immortal, because if protected from violent death live on indefinitely. The individuals of these unicellular species on the earth to-day are far older than mankind, and as old as life itself.

In the multicellular organisms, reproduction comes from certain germ cells in which the whole body participate. In the higher organisms of this class two forms of cells exists. One the somatic, the other the reproductive; the former suffer death and change, the latter continue. Death is simply adaptation to new conditions. Death does not necessarily follow reproduction, although the purposes of the organism are fulfilled in part by this act.

Life goes on continuously; the forms change by death and adaptation to circumstances, but one unbroken line of march exists from the first.

Reproduction is the point of change, when the forces of the old organism pass into a new state for the continuance of life under more favorable conditions. In a large class of organisms death follows this act. Death in old age is simply the limitation and end of the power of cell production. Life in the body is a continuous death and reproduction of cells. After a time the equilibrium is broken up, a certain class of cells become exhausted and die, and are not replaced or eliminated, and interfere with the functions and economy of the body. The division of labor in the cell organism is broken up, and some particular cell function is arrested. The dead and worn out cells are not replaced, and become an obstacle for the destruction and obstruction of other cells. The work which these cells fail to do must be done by others, whose normal activity will be taxed to its utmost, followed by early exhaustion and death. Both the cells and the reproductive cell function reach the limit of their existence; this is death. This cell life and renewal is finite, and death is simply the limit of existence. This may occur from shock in which this point is precipitated, and a sudden arrest of all these cell processes follows.

The utility of this process of change called death is a part of natural selection which further increases the preservation and distribution of new structures. It also enables the germ cell to enter into new forms of life, and escape from limitations which have bound it down. Artificial death may appear at any stage of the organism, and the vital forces be overwhelmed and unable to continue cell life, and both somatic and germ cells perish.

The duration of cell life is governed by fixed conditions within itself, and the surroundings and their influence over it. The germ life goes beyond this, and is only limited by conditions essential for its perpetual existence. Death is inherent for cell life; an eternal prolongation of these cells would impede and be injurious to the organism. In the higher animals this prolongation of cell life takes place long after reproduction has occurred, obviously to assist and protect the new organism. Also the period of reproduction is greatly extended in the higher species, to provide against all possible danger of extinction.

The theory of the possible continuance of cell life in the organism, by some form of drugs that would suspend activity, is an impossibility. Each cell has a separate existence of its own, which comes to an end and is replaced by others, uninfluenced by conditions only to a limited extent. The natural duration of life is only the measure of this existence in the cell colonies of the organism.

The germ cells continue a cycle that approaches nearer to immortality than anything we know of in nature. The molecular structure of somatic cells becomes worn out and dies, but the same structure of germ cells goes on repeating itself, beginning again anew as long as favorable conditions continue.

Like the circulation of water on the earth, it is evaporated, condensed into clouds, falls to the earth as rain, and continues the never ending cycle. Interruptions may occur at different points, and its circulation vary. So the ceaseless round of protoplasm may halt and change for a moment, only to go on again in the same course. The mortal cells have their cycles and are replaced by others, and this continues until the larger cycle of cell colonies is completed and what we call death follows, and the form or organism disappears.

This is the grand process of evolution in which life and death are inseparable, essential, and parts of the race progress.

## MENTAL CAPACITY SUFFICIENT TO SUSTAIN MARRIAGE IN LAW.

Every valid contract requires the concurrence of two or more persons, each of sufficient mental capacity to give an intelligent consent thereto. This requisite applies as well to matrimonial, as to commercial and property contracts. The old doctrine that the mind, though it has different faculties, is one and indivisible, and that, if any of its parts are disordered, or if it is in any way diseased, or its healthy operation in any function disturbed, it is an unsoundness of mind which affects the whole organ, and renders the person legally of unsound mind, and incapable of entering into a civil contract, is no longer recognized. The question under the present state of the law is not whether the mind of the party was in any way affected or impaired, but whether, such being the case, the impairment or defect of the mind operated upon or inspired the act which is the subject-matter of consideration; for, admitting that the party was subject to some delusion, or that his mind was in some faculty impaired, if the act challenged is not traceable to, and has not probably been influenced by the defect of intellect, but is the result of the action of the unimpaired faculties of his mind, it will not be disturbed. These statements are made by the court of chancery of New Jersey in the recently decided case of Kern *v.* Kern (26 Atlantic Reporter 837) brought for the annulment of a marriage as void for want of mental capacity in one of the contracting parties. The court in a very lengthy and carefully prepared opinion, wherein it reviewed many authorities on the subject, further says, among other things, that the test in the case of ordinary contracts is, did the person whose act is brought in judgment possess sufficient ability at the time he did the act to understand, in a reasonable manner, the nature and effect of his act, or the business he was transacting? If he did, his act is vali
He may have been old or enfeebled by disease,

irrational upon some subject, yet, if he had sufficient ability to comprehend in a reasonable manner what he was doing, his act will bind him. This is the rule in the absence of fraud. And the weight of the authorities is that no greater, if as much, mental capacity is requisite to make binding matrimonial, than is required to make ordinary business contracts, or a valid testamentary disposition of one's estate. There seems to be less difficulty in bringing to a test the acts of a person whose mind in its normal condition had been sound, but which has subsequently become affected, and subject to some delusion, than to establish any test with reference to the acts of one whose mind is weak or undeveloped; for in the first class the characteristics of the mania or delusion will probably make themselves apparent in the act, while as to the other, the border line between mental capacity and imbecility is so dim and indefinite that it is often difficult to determine whether the act has been guided by the light of reason, or done within the shadow of a darkened intellect. The abstract opinions of medical experts as to a person's mental condition may be entirely satisfactory in the consideration of the subject from a medical standpoint. but, in the solution of questions involved in judicial investigation, they must be tested and qualified with reference to the facts on which such opinions are based. A man may be mentally unsound in a medical point of view, from certain conditions which exist, which would not in a legal sense relieve him from responsibility. He may be subject to mania, and medically of unsound mind; yet, if the peculiar phase of mania had no influence upon the act brought in question, such act is not in the law invalidated. He may be an imbecile, and medically of unsound mind, but, if he has sufficient mind to reasonably understand the act, which is brought in question, he is legally competent. Each case must be decided on its own circumstances, and the ability of the party to understand can in no more satisfactory way be ascertained than by referring to his conduct in other transactions. Without attempting to formulate a rule to be adopted as the test of mental development of a person afflicted with congenital imbecility necessary to exist so as to bind him in making a contract, recognizing that each case must be governed by its own incidents, it would seem that if a person, in a general way, had an appreciation of the conditions of the marriage state, and understood the rights and responsibilities which attach thereto, and regarded the marriage ceremony as the incident which effected a marriage between himself and a certain woman, he should be held bound by a contract which he entered into under those conditions. There was in this case, as shown by the evidence, a person of weak intellect; one who at times might not express himself coherently, but who, until he was 35 years of age, had been permitted by his family to take care of himself and his property; one who had contracted no bad habits, and who had so taken care of his estate that it had been preserved, if not increased; whose memory was good; who, in making a bargain, manifested shrewdness and judgment; and who, in reference to the marriage in question, conducted himself without impropriety or peculiarity; a person who seemed to have had a proper conception of the ceremony which was being performed, and to understand the rights, duties and responsibilities which attach to the marital relation. While the conditions were no doubt sufficient to clear him as of unsound mind from a medical standpoint, the court did not think he could be said to be legally irresponsible, and decided that it would not be justified in annulling a marriage entered into under such circumstances, because of the alleged weakness of intellect of a contracting party.

## PAN-AMERICAN EXCURSION.

[From the Philadelphia Press.]

Philadelphia, always hospitable to visitors, gave a particularly gracious reception September 9th, to the distinguished delegates to the recently adjourned Pan-American Medical Congress. In the party were nearly 100 medical men, and a few of them were accompanied by their wives. The event of yesterday which will be longest remembered by the delegates was the reception held in their honor at the University of Pennsylvania by Provost Pepper, the trustees and faculties of that institution of learning.

The grounds and buildings of the University were thrown open to the visitors for inspection when they arrived at 3:30 o'clock, and under the guidance of Dr. Pepper they visited every department, lingering longest in the medical and surgical departments whose splendid equipment they much admired. After the inspection of the buildings the members of the party were grouped about the entrance to the library building and photographed. They were then invited inside and a collation was served. When coffee was brought in and cigars were lighted, Dr. Pepper rapped on the table with the handle of his knife and the talking ceased. He stood up, and called for Dr. Chas. A. L. Reed of Cincinnati, to come forward.

### A PLEASANT SURPRISE FOR DR. REED.

Nearly every one except Dr. Reed knew what was about to take place, but he up to that time had been enjoying himself unsuspiciously. He approached Dr. Pepper in some embarrassment, not divining exactly what it all meant. Dr. Pepper laid his hand affectionately on the shoulder of Dr. Reed and in well chosen words praised the work of that gentleman in bringing about the convention. He gave Dr. Reed a larger share of credit for the success of the convention than any one else, and then he said: "Your fellow-delegates of this convention decided that the occasion should not pass without some expression of our gratitude to the man who has done so much of the work which made it successful, and in order that in future years he and his descendants may remember this Congress we have prepared this piece of plate (uncovering a silver salver) on which we have had inscribed these words: 'Presented to Dr. C. A. L. Reed of Cincinnati, O, secretary general, by members of the First Pan-American Medical Congress, Washington, D. C., September 4-8, 1893, to commemorate the brilliant success—largely due to his faithful and devoted efforts in its organization—of that important occasion, when, for the first time, the representatives of the medical profession of the Western Hemisphere met in council for the advancement of science and the promotion of the public health.' "

Dr. Pepper handed the salver to the surprised secretary general amid the hearty cheers of all the delegates. Dr. Reed said, in accepting it, that a salver was used for handing food and drink to those who are hungry and athirst, and he would always look upon this particular salver as being laden with the friendship of his colleagues.

Dr. A. M. Owen of Evansville, Ind., then covered Dr. Pepper with confusion by making a retaliatory speech, in which he said a number of pleasant things about the Doctor, and finished by presenting him with an ivory gavel suitably inscribed. Then the speech making became general in a diversity of languages. After the reception the delegates returned to their hotel thoroughly tired, for they were sight-seeing from early morning.

They arrived at the Broad street station from Baltimore at 4:30 A. M., and remained in their sleeping car until 7 o'clock, when the Committee of Arrangements from the University, whose guests they are during their stay in Philadelphia, called for them at their coach. The committee consisted of Dr. John Marshall, chairman; Drs. James W. Holland, Ernest Laplace, Charles W. Dulles, Hobart A. Hare, E E. Montgomery, Edward Martin, James W. Ruders and De Forrest Willard.

The party was conducted to the hotel, passing through the court of the city buildings, where a stop was made to inspect the bronze statue of William Penn. It is told of one of the Washington doctors that he pointed out the statue to the foreign gentlemen as being that of the great Dr. Benjamin Franklin. The Washington guide afterward gave as his excuse that he could not see distinctly at such an early hour of the morning.

### RECEIVED BY THE MAYOR.

After breakfast at their hotel the visitors were conducted to the city hall, where Mayor Stuart welcomed them. In his speech the Mayor said:

"*Gentlemen.*—Philadelphia feels herself honored by the presence of such a distinguished body as the Pan-American Medical Congress, yet it seems particularly appropriate that you should so visit us, for the early—in fact, almost the entire—history of our city is closely allied to the history of medicine in this country. While we regret that your stay with us is somewhat limited, we hope that while you are here you will not only see all that pertains to the study and history of medicine, but that you will also see some of the material prosperity and industries of this great American city, and it affords me much pleasure in the name of the people of Philadelphia and on the behalf of the medical profession to extend to you a most sincere and heartfelt welcome to the City of Brotherly Love, hoping that your visit may be agreeable to you, as the remembrance of the same will always be to me."

After going over the public buildings the visitors repaired to the mint, where they saw the several processes of coining money; then they went through the Jefferson Medical College, and Independence Hall, from the latter place going to the Walnut street wharf, where several tugs took the party to Cramps'. They were cordially received by Henry W. Cramp, who conducted them over the battle ship *Indiana*, which is the nearest finished, and then through boiler and machine shops. At noon lunch was served in the company's offices. Then they went aboard the tugs and took a trip to League Island, where they had a look at the new United States cruiser, *New York*.

From League Island the party returned to the city, and made a hasty tour of other places of interest, taking in the Medico-Chirurgical College and the Drexel Institute, and then to the University of Pennsylvania.

### WILL INSPECT REEDY ISLAND.

Saturday the delegates will leave from Broad street at 9 o'clock A. M., for Newcastle, Del., where they will go aboard the revenue cutter *Hamilton*, and go down the bay to Reedy Island, where they will be received by Surgeon General Wyman, who will show them around the United States quarantine station. They will return to Philadelphia at 4:30 o'clock and will leave at midnight for New York.

The personnel of the party is as follows: Samuel S. Adams, chairman; M. C. Y. Valle and son, Rafael Lavista, E. R. Garcia, Jose Myta, Juan Zavata, Domingo Owananos, J. E. Monjaras, Francisco Marin, J. Martinez del Campo, Louis G. Munez, A Contreras, L. E. Ruiz, E. Liceage, R. Ycaza, Thomas Noriega, Angel Gaino, Fernando Zarraga, Manuel Guiterrez, Roge Macruzet and A. W. Fernandez of Mexico; Thomas Casas y Marti, Jose Clairie, Enrique Lopez and Antonio Touer of Cuba; F. A. Risyuez, Rivero Saldivia and David Lobo of Venezuela; Alfredo Garces, Guillermo V. Poredes and Daniel Gutierrez of Colombia; Pedro Lagleyze and Juan Mendieta of the Argentine Republic; J. C. Phillippo and R. S. Surton of Jamaica; Augusto Cemecu and V. L. Gilles of Haiti; Jifan Padilla of Guatemala; Juan I. Ulloa of Costa Rica; Juan Hernandez of Porto Rico; Baven Rake of Trinidad; Florestan Aquilar of Spain; Dr. Wolve of Scotland; Drs. Holton of Vermont; Cushing of Boston; Rohe and McShain of Baltimore; I. N. Love of St. Louis; J. V. R. Hoff U. S. A.; J. M. Anders, Ernest Laplace, E. E. Montgomery and S. A. Martin of Philadelphia; Drs. Cook, Kleinschmidt, Eliot, Johnson, Barker, Bowen, Wagonder, Acker, Morgan, Ober, Guiteras, Walton, Wellington, Happer, Jules Guthridge, J. Porces and R. M. Larner of Washington, D. C.

The party is made up of many who are not only representatives of the profession, but are distinguished citizens of their respective countries. Dr. Rafael Lavista of the City of Mexico is the personal physician of President Diaz, sustaining practically the same relation to him that Dr. Bryant sustains to President Cleveland. Dr. Carmona Y. Valle is the distinguished dean of the faculty of the National University, and is perhaps the most renowned medical practitioner of the republic. Dr. Eduardo Liceaga is the president of the National Council of Health of Mexico, and is possessed of extraordinary power in the enforcement of quarantine and other sanitary regulations. Dr. Juan J. Ulloa is the official representative of the government of Costa Rica. He is a graduate in medicine from New York, is highly influential in the government councils of his own country and is thoroughly American in all of his sympathies. Dr. Duenas is a prominent professor in one of the leading medical schools of the United States of Colombia. Dr. John C. Phillippo is the president of the Legislative Council of Jamaica, and is concededly the most distinguished citizen of that colony. Dr. Munez of Peru, is a prominent officer in the army medical service and stands high in governmental circles. Dr. Francisco A. Risquez of Caracas, is the practical censor of the medical profession of Venezuela, and is especially delegated by his government to participate in the hygienic deliberations of the Congress. Dr. Pedro Lagleyze, the delegate from the Argentine Republic, is a prominent editor and an eminent ophthalmologist of Buenos Ayres. Dr. Clairac is the Surgeon General of the Spanish army in the West Indies.

"The significance of these facts," said a member of the Congress, "is that in entertaining this distinguished delegation the citizens of Philadelphia are securing the friendship of people who are capable of largely controlling the course of affairs in their respective countries. Further reciprocity will be much more easily effected in the future than before the friendship of these gentlemen had been secured through the side avenues of fraternal feeling and professional interest."

# DOMESTIC CORRESPONDENCE.

## Dr. Hammond Replies to His Critics.

*Dear Sir:*—In the last number of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION there is a communication from Dr. D. R. Brower transmitting the details of an analysis made of cerebrine and medulline, said to have been prepared by my formulas. Of course I have no assurance that the specimens examined were really what they purported to be, neither does Professor Delafontaine, who made the analysis, so assert. He examined what was given him and I have no disposition to question his honesty in the matter.

I have only to say:

1. That the cerebrine as prepared by my process is a solution obtained by macerating the brain of the ox and the contained blood for from six months to a year in a mixture of equal parts of absolute alcohol, glycerin, and a saturated solution of boric acid in water, with frequent agitation and the application of strong pressure. As Professor Delafontaine does not mention either the alcohol or the solution of boric acid, but declares that the excipient of the sample he examined "was chiefly glycerin," it is quite certain that the specimen given him was not prepared by me.

2. But admitting that the sample was genuine, his discovery of a substance, either "nitroglycerin or some very closely allied product which does not preëxist in the ox brain," was partially anticipated by me several months ago, as you will perceive by the following quotation from my original paper on "Certain Organic Extracts," published in the *New York Medical Journal*, January 28, 1893:

"It may be that the mixture of boric acid, alcohol and glycerin exerts a metamorphic influence and causes the formation of a ferment having the power of restoring to the weakened brain or other viscus the lost or impaired power of assimilation."

3. It was fully anticipated in a paper entitled "A further Contribution to the Subject of Animal Extracts," published in the *New York Medical Journal*, July 1, 1893, as the following quotation shows:

> "The immediate effects of the cerebrine and of most of the other extracts are those indicating vaso-motor disturbance, and are so far similar to those produced by the nitrite of amyl and trinitrin or nitroglycerin. It is of much longer duration but not so intense as that produced in the average person by a drop of a 1 per cent. solution of nitroglycerin. I have experimented largely upon myself and others with fresh extracts of the brain mixed with solutions of nitroglycerin of various strengths, and I am convinced of the great difference in the action of these mixtures and of cerebrine prepared according to my formula. It has been observed by those who have employed the extract of the thyroid gland in the treatment of myxœdema that even more severe symptoms usually follow the administration. These are in the form of giddiness, headache, faintness and an apparent tendency to convulsions, and occasionally it has been found necessary to suspend the treatment on this account. Similar effects to those produced by cerebrine are generally observed from the hypodermic injection of the extract of nerve substance prepared by Dr. Gibier. I have never in a single instance—and I have used them many hundreds of times—observed the slightest alarming effect from the use of the animal extracts prepared according to my method.
>
> "I have sometimes thought that the combination of glycerin, alcohol and the highly nitrogenous substances from which these extracts are made might result in the production of a subject analogous to nitroglycerin, and in my first communication on the subject to the *New York Medical Journal* I threw out the suggestion of a secondary product being formed. As I have said, however, the thorough chemical analysis which is now being made will, I hope, dissipate the uncertainty which necessarily exists relative to the exact composition of these extracts."

This, to some extent at least, takes away from Dr. Brower and Mr. Baker the honor of having made an original discovery relative to the physiological effects of cerebrine.

4. The fact that Professor Delafontaine detected no organic matter is sufficient to enable me to assert positively that the specimen submitted to him was not prepared according to my formula. Every analytical chemist will admit that it would be impossible for finely comminuted brain substance and blood to remain several months in contact with the menstruum I have mentioned without parting with some portion of their organic constituents.

5. Either Professor Delafontaine's analysis was very superficial and inexact, or the mixture he examined was glycerin to which nitroglycerin had been added. It certainly was not cerebrine.

6. It is impossible for Professor Delafontaine, or any other chemist, to say what would be the results of the long continued maceration of brain substance and blood in alcohol, glycerin and solution of boric acid. He may express his non-belief "in some putrefactive process, generating a nitrate, in the Hammond product," and I fully agree with him in this, for there is no putrefactive process, and consequently no ptomaines. But should he declare that no leucomaines could be generated in such a mixture, he would be exhibiting a degree of temerity which I venture to hope he is not capable of showing. He can not be unaware of Schreiner's discovery of spermine, and he doubtless himself has seen crystals of this substance, as I have for many years, on nervous tissues preserved for several months in alcohol.

7. And I thoroughly agree with him when he says: "On the other hand, a sample of cerebrine made by another firm proved to be physiologically inert, and utterly failed to give any of the color reactions described in the foregoing lines."

8. My laboratory is at all times open to the inspection of chemists and physicians, and specimens of the extracts, taken directly from the vessels in which maceration is going on, are at their disposal for such examination as they may see fit to give. Yours respectfully,

WILLIAM A. HAMMOND.

*Washington, D. C., Sept. 2, 1893.*

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## Hughes—Moyer—Hinde—A Correction.

*To the Editor*—*Sir:*—In the current number of the JOURNAL appears the "Address of the President of the Section on Neurology and Psychiatry of the Pan-American Medical Congress," which I have just read with interest and profit. As a matter of fact, however, I wish to correct that which concerns myself. In referring to the work of my friend, "Moyer, the tireless," Dr. C. D. Hughes (p. 387) gives him the exclusive credit of reporting the first case of "Periodically Recurring Oculo motor Paralysis" in this country, and in parenthesis refers to the *Medical Record*, 1887. The facts of this case are as follows: The case was referred to me by my friend Dr. D. O'Shea, and recognizing it as of rare and special interest, I showed it, in my regular work, at Prof. Holmes clinic at Rush Medical College, and later at the neurological clinic of Prof. Lyman, who also recognized the rarity of the case. It was first seen by Dr. Moyer at the latter clinic, and he asked to share with me in the report of the case, to which I unselfishly agreed. It still continued to be my case, however, as will later be evident. Together we prepared the first paper. When it was ready Dr. Moyer asked permission to read it before the Chicago Medical Society, of which I was not then a member. I agreed to this, expecting, of course, an equal division of praise or blame would be shared by both of us. Dr. Moyer, however, inadvertently left me out of the paper and the case altogether, though I was present at the meeting as an auditor—a surprised auditor, I admit.

The paper was then turned over to me and I sent it for publication to the *Medical Record*, and it appeared in the issue of September 24, 1887, as a joint report of Dr. Moyer and myself. The case continued solely under my observation, however, and without the knowledge of Dr. Moyer, I wrote a second paper on the case that was forwarded to the *Medical Record* and published in the issue of October 22, 1887, a full account of which may there be found (pp. 536–538). Silence may be a great virtue, and hence has been long-lived, but I feel that credit ought to be divided in this instance, and I request you to kindly publish this communication.

ALFRED HINDE.

## ASSOCIATION NEWS.

**Loyal to the American Medical Association.**—An editorial in a current issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION takes occasion to point out that the statements published in the JOURNAL immediately after the annual meeting this year have a tendency to belittle the affairs of the JOURNAL and also of the Association.

The editor says that the reason of this is not on account of what was published, in which case there would be no need of an explanation, but that certain more or less unfriendly journals to the Association have published and given wide circulation only to parts of the editorial mentioned, and not the whole article.

Dr. Hamilton, the present editor says, that at the last meeting there was an increase in membership of 273, and in the last month, the membership by application has brought the increase up to 300.

Also; there has never been a time when the JOURNAL had so large a bona-fide mail list, and there has never been a moment when there was not money in the treasury; more than sufficient to meet any possible contingency. There have been added eight pages of reading matter, and the outlook for the publication has never been brighter than at present.

The *Omaha Clinic* should dislike exceedingly to be classed as one of the "not over-friendly publications."

This not over-friendly spirit and the spirit of indifference is not manifest in the West; if there is such it must emanate from somewhere "down East." There may be sporadic cases in the West, but their ideas have been brought with them from the other quarter.

We regard the American Medical Association as America's only truly national medical organization, and in proof thereof we adduce that it is only here that we can expect to find those questions of vital interest to the profession fearlessly discussed by representatives of all parts of this country. The fact that the American Medical Association stands in this broad manner to the profession, necessarily lays it open to the sharp attacks of individuals and more close organizations.

The *Omaha Clinic* regards it as its imperative duty to instruct societies all along the line in its influence, to lend their aid to the Association to build up the profession.

When we differ with the Association it is by virtue of an honest interest in it for that which we think is best for the profession and to be so held by its representative organization.

Never has this journal differed with intent to disparage, or to lend aid, or to further the interests of any organization to take its place.

The constitution of the AMERICAN MEDICAL ASSOCIATION is open to a change when the profession demand it by a legitimate vote, and there is no constitutional democratic government on earth in any way different from this. We truly hope that next year the ASSOCIATION will take up the issues which seem so urgently pressing—the remedy, when necessary, is in the hands of the members—and show this country, East, North, South and West by a majority vote as to what is the present will of the profession to be stamped in the year 1894 on our medical government.

To do this, according to the advice of ex-President Hunter McGuire we should like to take this occasion to point out that, if as so recommended, a fair opinion be had from all sections of our country, well represented, in changing the constitution, and also that which Dr. Roberts of Philadelphia, declared is a part of it; namely the code, then by all means something must be done toward placing the date of meeting for San Francisco in June, and not the first week in May (as the constitution of most State societies require that they meet not earlier than May) and the State societies will be able each to voice its opinion on the issues, which when engrafted upon the AMERICAN MEDICAL ASSOCIATION, will certainly show to the indifferent East and the interested North, South and West, whether the ASSOCIATION is America's representative body and represents the views of the American profession.—*Omaha Clinic.*

## SOCIETY NEWS.

**The American Medical Editors.**—The American Medical Editors' Association met in Washington, in the large banquet hall of the Arlington hotel on Monday, September 4. The President, DR. C. H. HUGHES, of the *Alienist and Neurologist*, read a short and pithy address of welcome to the invited guests, and the versatile vice-president of the American Medical Association. Dr. I. N. Love of the *Medical Mirror*, was toast master of the evening. To the toast of the "President of the United States," the Hon. J. Sterling Morton, Secretary of Agriculture, responded in a most happy manner. "The Secular Press," was responded to by Hon. Frank Hatton, editor of the *Washington Post*; "THE AMERICAN MEDICAL ASSOCIATION," by President J. F. Hibberd; "The Pan-American Medical Congress," by President Pepper; "The Medical Press," by Dr. Hobart A. Hare of Philadelphia; "The Surgeon General of the Army," by Ex-Surgeon General Hammond, General Sternberg being absent; "The Surgeon General of the Navy," by Ex-Senator John B. Henderson of Missouri, who gave an interesting account of the purposes and objects of the Pan-American Congress over which he presided last year; "The Public Health," and "THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION" by Dr. John B. Hamilton.

The volunteer speeches brought out by the skillful touch of the toast master, were many and excellent. Among the most notable of the after dinner volunteer speeches were those of Dr. Ernest Hart of the *British Medical Journal*, Dr. Phillipot of Jamaica, Dr. Abram Owens of Evansville, and Dr. Garcelon.

In the intervals between the speeches, Major Stofer, the well known Washington correspondent, rendered some pleasant musical selections, and Mr. Seabrook the actor gave one of his characteristic recitations.

As the evening waned, it *dawned* upon some of the invited guests that American medical editors knew how to enjoy themselves, and take a few hours of recreation, as well as any other class of Pan-American citizens.

**Pan-American Comments.**—The Section meetings were well attended, the papers excellent, and management as good as should have been expected. There were some papers dislocated, but they may easily be placed in proper position when the Transactions come to be printed. The practice of subdividing the general Sections into many independent Sections, is one the next committee on organization will do well to avoid. There were too many papers in several Sections to allow time for intelligent discussion of all of them, and at the close many excellent papers were read by title for want of time to hear them either in full or by abstract.

The American Medical Association having invited its Pan-American guests did its full duty by them. A glance at those in attendance at the Sections, showed the familiar faces of the members largely in excess of any others, and to those members the officers of this Congress confidently appealed for support; that they were not disappointed, the magnificent success of the meeting shows.

It is pleasant to note that soon after the close of the meeting the late Secretary General Reed received a graceful recognition of his untiring labors, at the hands of his associates, and that ex-President Pepper, and the other general officers of the Congress, if not furnished with a silver token, will yet have the affectionate and grateful thanks of their medical brethren, embalmed on the record pages of this now historic Congress.

**Medical Congress Adjourns—End of the Pan-American Meeting.** —RESOLUTIONS ADOPTED REGARDING QUARANTINE—THE DELEGATES START ON A TOUR THROUGH THE COUNTRY.—Washington, Sept. 8.—The final meeting of the Pan-American Medical Congress was held this morning. The Rev. Dr. Byron Sunderland, of the First Presbyterian church, the oldest pastor in Washington, opened the proceedings with prayer. Addresses of thanks and congratulation on behalf of their respective countries were made by Dr. Garcias of the United States of Colombia, in Spanish, and by Dr. Ferd C. Valentine, ex-Surgeon General of the Army of Honduras, in English, and by Prof. Rafael LaVista of Mexico.

Secretary General Reed read the report of the International Executive Committee. The committee accepted the invitation of the Mexican delegates to hold their next meeting of the Congress in the City of Mexico. The date will depend upon the meeting of the International Congress in Europe. The various recommendations by the several Sections were generally adopted by the committee. The most important exception was the one advising a temporary suspension of immigration from European countries in which cholera is now prevalent. It was deemed best, the report stated, not to consider this resolution at the present time. Thanks were given to President Cleveland, the Congre the United States, the Surgeons General of the United States Army, Navy and Marine Hospital Service, the officers of the Congress, the local Committee on Arrangements, the press and the railroads for their efforts to make the meeting of the Congress a success. The report was adopted.

Dr. Gihon presented the following resolutions, which the Section on Hygiene, on motion of Dr. Shakespeare, had adopted:

*Resolved*, That the thorough disinfection, without discrimination, of every piece of baggage, dunnage or article of personal effects belonging to the immigrant classes and to the crews of immigrant ships, and the exaction of scrupulous cleanliness of all vessels arriving at American ports, should be rigidly enforced at American ports, supplementing and enhancing the protective value of similar treatment at the ports of departure, especially at times when cholera exists in Europe, as a sanitary measure, second only in efficiency and importance to the temporary suspension of immigration.

*Resolved*, That the habitual and thorough disinfection of all personal effects liable to carry contagions of immigrants to the American hemisphere, and of dunnage of crews of vessels carrying these immigrants from any quarter of the globe, and the exaction of scrupulous cleanliness of all vessels arriving at American ports, should be enforced at all times, as the most efficient means of greatly lessening the introduction into this hemisphere of the seeds of various contagious diseases which are now and have been in the past almost constantly conveyed by the immigrant classes and distributed widely among the populations of this hemisphere

These resolutions were referred to the International Executive Committee. Dr. Montezambert of Canada, stated that that country had already put into effect the recommendation of the resolutions regarding the disinfection of immigrants' baggage arriving at her ports.

*On behalf of the visiting* delegates and guests of the Congress, Dr. John C. Phillippo of Bermuda, Professor Ernest Hart of England and Dr. Rafael Lovisto of Mexico, returned their thanks for the cordiality and bounteousness of their reception and entertainment while in Washington. Dr. Phillippo paid a warm and eloquent tribute to the memory of George Washington, whom he designated as the greatest character in history, which the Congress rapturously applauded.

President Pepper then, in a few well chosen words, expressing the purpose of those connected with the Congress to stand by it, develop it and make it more useful to the members of the profession throughout the continent, declared the Congress adjourned, to meet in the City of Mexico either in 1896 or 1897.

At 1:30 o'clock this afternoon the foreign members of the Congress, with the members of their families, accompanied by the Committee on Arrangements and officers of the Congress, left Washington over the Pennsylvania road for an extended trip through the Eastern cities, and thence to the World's Fair, as the guests of the committee, under the resolution of Congress inviting the attendance of foreign delegates. The trip will include stops in Baltimore, Philadelphia, New York, Boston, Saratoga, Niagara Falls, Detroit, Cincinnati and Chicago. Upon arrival at Chicago the 19th instant the party will separate.

**The Second Pan-American Medical Congress.**—The affairs of the next Pan-American Medical Congress are placed in the hands of an international executive committee, one member from each country, and that committee decided that the next meeting shall be held in the City of Mexico, at a time yet undetermined. It is probable that the winter season will be selected and that the Congress will be held five years from this date, with our accomplished colleague, PROF RAFAEL LAVISTA of the University of Mexico, as its President.

*The proposed change of time to five years, it is urged,* will not give time for complete organization and results of special ex tation but will cause the holding of the next session in the *the International* Medical Congress. Others are of the opinion that the meeting should take place in 1896, but the question is one that only our Mexican confrères can decide.

**The American Electro-Therapeutic Association** held the opening session of its third annual meeting on the 12th at the Apollo hall, Central Music Hall block. The President, Dr. Augustin H. Goelet of New York, called the meeting to order at 9:30 A.M., and delivered the opening address, in which he spoke of the influences governing the progress of electro-therapeutics and congratulated the Association on its growth. The afternoon session opened at 2:30 P.M. Several papers were read and discussed. That which created most interest was the paper read by Prof. William J. Morton, M.D. of New York, on "The Nutritional Effects of Statical Electricity Considered in Relation to High Frequency and High Currents and Permeability of Di-electrics to Such Currents" Prof. Morton stated that the currents in question are those which have recently become known through Tesla's experiments.

Other papers read were:

"Electrolysis in Tumors of the Bladder," by Dr. Robert Newman, New York; "Electro-Medical Eccentricities," from H. Newman Lawrence, M.I.E.U. of London, England; "The Action of the Continuous Current within the Living Tissues, as Distinguished from the Local Polar Action," by Prof W. J. Herdman, M.D., Ann Arbor, Mich.; and "Metallic Electrolysis," by Margaret A. Cleaves, M.D., New York.

At the evening session, which commenced at 7:30 P.M., the following papers were read:

"Further Observations on the Treatment of Goitre," by Charles B. Dickson, M.D, Toronto; "Notes upon Some Uses of Galvanism in Surgery," by D. D. Weaver, M.D., of Reading, Pa.; and "Report of a Case of Ascites Cured by Galvanism," by Halford Walker, M D., Toronto.

A reception was given at the Great

9 to 11 in the evening by the Committee of Arrangements to the members of the Association and the members of their families accompanying them.

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## Pan-American Medical Congress.

REPORT OF THE PROCEEDINGS OF THE SECTION ON MILITARY MEDICINE AND SURGERY.

The pamphlet program of the work of this Section intimated that on the afternoon of Tuesday, September 5, an informal meeting would be held in the Army Medical Museum for the purpose of inspecting the collections contained in this Museum and the Library of the Surgeon General's office. About fifty members responded to the call and an hour and a half was spent in examining the building, its show rooms, book cases and laboratories under the guidance of the Librarian and Curator, Major John S. Billings, U. S. A. The total number of specimens now in the museum is 32,265, and this number is steadily increasing, 1,040 having been added to it during the past year. The library contains 110,650 books and 173,000 pamphlets.

At 11 A.M. of Wednesday morning, September 6, the Section was called to order by the Executive President, Surgeon General STERNBERG, U. S. A., who opened the session by expressing his gratification at seeing present so many medical officers of the regular army and National Guards, notwithstanding the fact that the Association of the Military Surgeons of the National Guard of the United States had met so recently in Chicago. He then delivered his address which we had the pleasure of submitting to our readers in our issue of September 9. After referring to the progress of antiseptic surgery and military sanitation he suggested the conditions essential to the de novo origin of hospital gangrene and erysipelas. Under certain conditions of lowered vitality, the result probably of the toxic influence of the ptomaines elaborated by putrefactive bacteria, a microörganism ordinarily of a comparatively harmless character may invade a wounded tissue and acquiring pathogenic virulence in its new environment may subsequently be capable of existing in healthy tissue, which it destroys, and of spreading the infection of disease by the permanence of its acquired properties. Antiseptic methods of treatment may be relied on in future wars to reduce the number of traumatic infections just as disinfection may be depended upon to limit the specific febrile diseases.

To judge from the hearty applause which greeted the conclusion of the address, the views of General Sternberg were received with favor by the delegates and others who were present.

SURGEON GENERAL CHARLES SUTHERLAND, U. S. A. (retired) was then introduced. He described the organization of the Hospital Corps of the Army and the methods adopted for the education of its members and the company bearers in litter bearing and giving first aid to the wounded. As an illustration of the excellent results produced by these methods he referred to the record which the Hospital Corps had made for itself during the Sioux campaign of three years ago.

SURGEON GENERAL BERGEN of the Canadian Militia stated that in some of the Canadian regiments considerable progress had been made in teaching first aid and stretcher drill.

DR. BEDFORD BROWN of Alexandria, Virginia, a representative of the medical department of the late C. S. A., referred to his knowledge of the destitute condition of the medical department on the Southern side during the civil war. Gangrenous wounds in the field did well when isolated under tent flies and treated locally with hot water dressings and strong solutions of sulphate of zinc.

DR. P. S. CONNER of Cincinnati, Ohio, then read a paper on

LAPAROTOMY IN GUNSHOT WOUNDS OF THE ABDOMEN.

He cited the large death rate from penetrating wounds under expectant management. At one time such wounds were regarded as necessarily fatal. The reports from the great wars of the third quarter of our century show that from 65 to 92.5 per cent. of the cases coming under observation terminated fatally; but they formed only a minority of the whole number of such wounds, for many cases perished quickly on the field from hemorrhage. Of cases in which laparotomy was performed, Körte collected 64 with 42 deaths or 65.6 per cent.; Morton 110 with 74 deaths or 67.27 per cent; Barrow 112 also with 74 deaths making 66 per cent; Martin and Hare 129 with 86 deaths, 66.66 per cent; Coley 165 with 111 deaths, 67.2 per cent; but all these statistics are vitiated by the errors due to the suppression of unfavorable cases. In 174 cases collected by Dr. Conner and constituting all the laparotomies performed by fifty-five medical men who reported to him as having had personal experience of the operation there were 123 deaths or 70.67 per cent. Some of the published statistics indicate that the chances of a favorable termination are greater when operative procedures are not instituted; but many of the unoperated cases that are published and thus become embodied in the statistics are reported merely because their result was not that usually observed. One of the chief causes of fatality after operation is shock and this is proportioned to the duration of exposure during the operation. A certain and safe method of determining the place and number of the lesions is greatly needed. Insufflation is unreliable and sometimes injurious. Leaving out of consideration the cases in which there is profuse hemorrhage or external discharge of feces, urine or bile—cases in which operation is certainly called for,—the propriety of laparotomy must be determined according to Dr. Conner, by consideration, on the one hand, of the likelihood of the occurrence of septic infection if it is not done, and on the other of the probable amount of shock that may be expected to attend the operation, bearing in mind, meanwhile, the fact that the necessary manipulations of the laparotomy may be a determining cause of toxemia, in the breaking up of already formed protective visceral adhesions. When the wound has been made by a small ball, caliber 22 or less, especially if it is well above the level of the umbilicus, or, without regard to the size of the bullet if it is well out from the central line of the body, and it may reasonably be expected that its course has not been towards that line and if the patient's general and local conditions are good, abdominal section should not be made. When the symptoms indicate decided hemorrhage or fecal extravasation operative interference should be made at the earliest moment. When the bullet is of medium or large size and has in all probability passed through the area occupied by the small intestines or wounded the liver, spleen, kidney or bladder the operation should be performed; and even if peritonitis has developed its presence does not contraindicate the operation though it increases the gravity of the prognosis.

DR. VANDER VEER, Albany, N.Y., spoke of the great fatality of penetrating wounds of the abdomen during the civil war and of the more humane character of the wounds by the smaller calibers of to day. He coincided generally with the author of the paper in his conclusions as to when the operation should or should not be performed.

DR. L. A. LA GARDE, U. S. A., in speaking of abdominal wounds from small calibers, considered that wounds inflicted beyond the explosive range would seldom call for operative procedure; but that at short ranges visceral injuries would probably be as great as with the larger bullets.

DR. BERNAYS of St. Louis, Mo., referred to the empty or full condition of the stomach and intestines as bearing on the necessity for operation. In closing the discussion, Dr. Conner urged the desirability of knowing the results of all cases of laparotomy,successful or unsuccessful,and requested those who knew of any unreported cases to inform him of the details.

At 2 P. M. the Section met on the green sward in rear of the Library and Museum Building, where a field hospital had been pitched as a practical illustration of some of the points that might be broached in the discussion on first aid announced as part of the program for the afternoon. All the members of the Section were present, with many delegates from other Sections. The Secretary of War and the Major General commanding the Army were also present, as interested spectators of Major Hoff's demonstration of hospital corps drill and army methods of giving first aid on the field of battle. A clear space in front of the tents had been roped in and was under military guard to prevent the crowd of curious onlookers from interfering with the proceedings of the Section. Major Hoff's detachment consisted of only eight men and a non-commissioned officer; one litter squad of four men from his own post, Fort Columbus, N. Y., and the other borrowed for the occasion from the detachment on duty at Washington barracks, D. C. The promptness, care and intelligence shown by these men in handling the members of the guard who acted as the wounded, demonstrated fully the efficiency of the army method of educating its corps of litter bearers. Wounds were dressed, hemorrhage controlled by tourniquet, and broken limbs put up in extemporized splints in a way that called forth commendation from every one. The drill was carried out in accordance with the program published in full in our issue of September 2, and at its close the delegates inspected the field hospital, which consisted of a dispensary tent, kitchen and dining room, tents of the medical officers and men and one hospital tent as a ward of six beds. Another hospital tent was pitched by one of the litter squads to show the delegates how promptly the accommodation of the field hospital could be extended. The time occupied in pitching the tent was four and a half minutes.

The Section then adjourned to the lecture hall of the National Museum, where its sessions were held, to continue the proceedings of the afternoon by a discussion on the methods of first aid, General Sternberg in the chair. Colonel Page summed up his criticism on the hospital corps in the sentence: "Skilled labor is better than unskilled labor." Colonel Irwin spoke of the difficulty experienced in getting the company bearers out for drill and instruction, and Colonels Alden and Forwood, in referring to this, thought it would be well to have all the men of the company instructed in the elementary parts of the drill. Major Huntington described the organization of the hospital corps and considered that it now was what it was originally intended to be, the nucleus around which in time of war we can gather the hospital men of the volunteer forces. Surgeon Beyer of the Navy, expressed his admiration for the able manner in which the first aid system had been elaborated in the Army, and regretted the absence of such a system in the Navy. Captain Woodruff spoke of the difficulties attending the operations of military surgeons in the field as compared with hospital work in civil life. Prof. Conner suggested that little is required for first aid. In many cases an antiseptic pad is all that is needful for twenty-four or forty-eight hours. Major Billings stated that after having seen the drills at Aldershot and St Thomas, he thought the exhibit of this afternoon was perfectly satisfactory as compared with them. Major Hoff closed the discussion by defending the system of company bearers. He had found no difficulty in getting them out fo instruction or in teaching them afterwards.

A paper was then read by Capt. LOUIS A. LA GARDE, U. S A., entitled:

### ARE PROJECTILES FROM PORTABLE HAND WEAPONS STERILIZE BY THE ACT OF FIRING?—CAN A SEPTIC BULLET INFECT A GUNSHOT WOUND?

Captain La Garde's experiments authorized him to con clude that the majority of cartridges in original package are sterile, and the majority of gunshot wounds are there fore aseptic so far as the bullet is concerned; but a septi bullet can infect a gunshot wound.

At 11.15 A. M., Thursday, September 7, the Section wa called to order by Surgeon General Tryon, U. S. N. Th first paper of the day, read by Colonel Irwin in the absenc of its author was:

### THE AVOIDANCE OF INTESTINAL DISORDERS IN THE FIELD,

by Brevet Lieutenant Colonel A. A. WOODHULL, U. S. A. I *this paper the principal diarrheal causes were summarize* as change of diet and imperfect cooking; the drinking o unsedimented, hard or malarious waters; alternations o temperature, and exposure to the conditions under whic enteric fever becomes prevalent. As preventives a c petent knowledge of field cooking; the use of an abdomina protector, such as is known in India as the cummerbund o cholora belt, and the protection of the camp from excreta foulness were strongly urged. In connection with th presidential address on the causation of hospital gangren and erysipelas the following sentence in Colonel Woodhull's paper indicates the tendency in army medical mind to regard some of the so-called specific *infectious* disease as resulting from the influence of *insanitary conditions* on th evolution of bacterial life. "I have long believed," he says "that in the course of many bacterial generations, which may be included in a relatively short season, an innocent bacillus by its environment may become pernicious, and I see no reason why in the interest of safety this might not be adopted as a working hypothesis."

The paper was discussed by Colonels Irwin and Alden, Dr. B. Brown and Majors Huntington and Hoff. Colonels Irwin and Alden spoke of the advantages of post messes; Dr. Brown, of the liability of the illiterate volunteer soldier to intestinal disorders as compared with his educated comrade; Major Huntington, of the untrained company cooks of our army and the desirability of having the food of the soldier well cooked in times of peace as well as in times of war, and Major Hoff in this connection suggested a service corps of cooks, organized by and under the orders of the subsistence department.

The next paper read was by Dr. BROWN giving his personal experience in the results of good and bad sanitation in the confederate army. He described the insanitary conditions of camps in the confederate service in the early period of the war, and contrasted the non-efficiency from sickness i certain of these camps with the corresponding rates among troops living under an efficient sanitary government. Th systematic æration of tent sites was represented as of the highest importance. Some interesting points were mentioned in connection with the prevalence of measles in the army generally, and of cerebro-spinal meningitis in camps at Raleigh, North Carolina. The latter disease was regarded as eminently infectious and required for its suppression the prompt removal of the sick to isolated wards. Diarrhea as due to faults of cooking also received its share of attention at Dr. Brown's hands; but the keynote of his paper was a call for systematic cleanliness as the most potent agent at our command in military or civil practice for the prevention and cure of disease.